COAL AGE

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Do You Appreciate the Importance of Effective Fire Prevention?

STRANGE *though it may seem there is only one effective way of bringing home to a man the importance of fire prevention, and that is to make that man a sufferer from a fire.*

* * *

If you doubt this statement, visit some of the coal-mining camps in your immediate neighborhood; you'll find tipples, fanhouses, hoisting-engine houses, washeries, etc.—all built of wood and often oil-soaked at that—bunched together so closely that they would have to be considered as one building by an insurance inspector, yet not a fire extinguisher worthy of the name will you find on the job.

At an adjoining mine you will find a few scattered hand extinguishers covered with cobwebs, and if you inquire closely you will learn that they haven't been recharged in four years.

When is a chemical fire extinguisher not a fire extinguisher? In about 10 months.

If you travel still farther you will find a mine well equipped with fire plugs and hose, but if you follow the water lines back to their source you will find a silent pump; not a man on that job can tell you when that pump and fire line were last tested if they ever had been tested.

If you have not become discouraged by that time, and will continue your tour of inspection long enough, you will probably find a mine with a sure enough fire truck, together with a liberal supply of hose, hand extinguishers, axes, buckets, etc. And even then it is possible that upon inquiring you will learn that no fire drill of any kind has ever been heard of, and in case of fire it is possible that the superintendent would have to appear and order some men to take hold of the truck to insure its being taken from its shed; even then, probably not an experienced man could be found to handle it. Fire chiefs have said that two experienced men can do more toward getting control of an incipient blaze than 20 novices.

We have visited a good many coal-mining camps, but we have yet to find the first one adequately equipped with fire-fighting apparatus, properly inspected and maintained, if its fortunes were not under the guidance of some one who had suffered from a disastrous fire.

On second thought we modify that a little. We often find camps where fire-insurance companies have insisted that certain apparatus should be installed immediately under threat of cancellation and their instructions were carried out. But fire-insurance inspectors usually make annual inspections and a good many things can happen to fire-fighting equipment in one year if it is left to itself.

We haven't mentioned the miners' houses, which often contain the entire worldly possessions of many of their occupants. Who ever thinks of them?

There is one bright ray, however, behind this cloud of carelessness and thoughtlessness and that is the tendency to rebuild with fireproof buildings, once surface buildings are destroyed by fire.

The New Mining Plant at Bicknell, Ind.

By Andrews Allen*

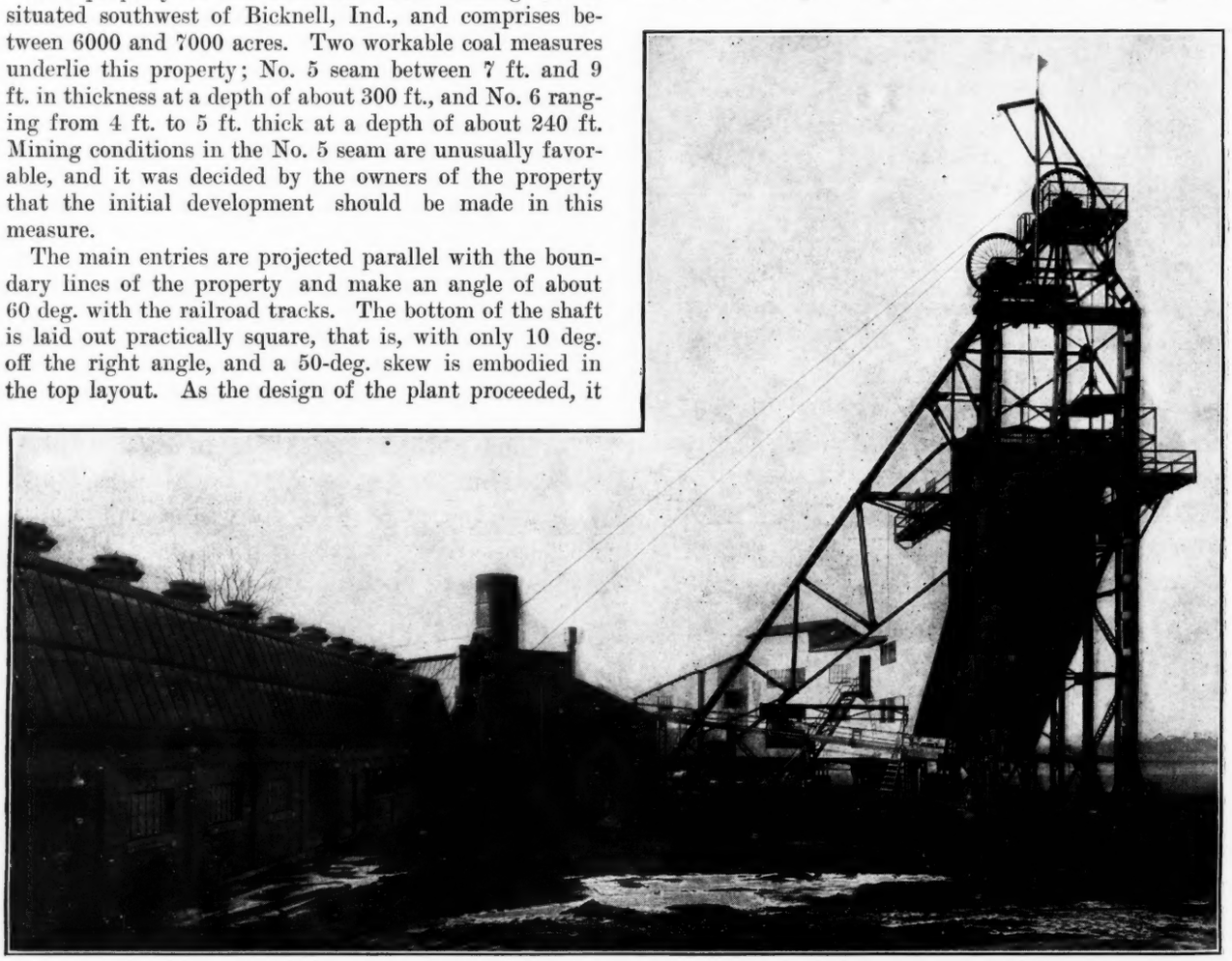
SYNOPSIS—The shafts at this plant are the largest in Indiana. The tipple is a combination of two distinct units, each simple, efficient and complete in itself. Alternating current will be used for cutting, operating top motors and eventually for main-line haulage.

The property of the American Coal Mining Co. is situated southwest of Bicknell, Ind., and comprises between 6000 and 7000 acres. Two workable coal measures underlie this property; No. 5 seam between 7 ft. and 9 ft. in thickness at a depth of about 300 ft., and No. 6 ranging from 4 ft. to 5 ft. thick at a depth of about 240 ft. Mining conditions in the No. 5 seam are unusually favorable, and it was decided by the owners of the property that the initial development should be made in this measure.

The main entries are projected parallel with the boundary lines of the property and make an angle of about 60 deg. with the railroad tracks. The bottom of the shaft is laid out practically square, that is, with only 10 deg. off the right angle, and a 50-deg. skew is embodied in the top layout. As the design of the plant proceeded, it became evident that this skew at the top was an apparent disadvantage only, and that the location actually lent itself to an advantageous arrangement in buildings and to a simple layout of the tipple itself.

The boiler house is placed down the tracks from the tipple, and the hoisting-engine house was so located that sufficient distance was left between it and the shaft so that there was enough room to locate the engines and generators for the present and future needs of the mine and space was reserved in a triangular opening between the temporary end of the engine room and the boiler house to take care of additional units if the plant was ever to serve as a central power station for additional mines.

The blacksmith shop, machine shop and store room are located directly in line with and adjoining the engine house. The office is on the same line, but far enough away to allow the building of a miner's wash-house between. The fan was set in line with the shaft 220 ft. away therefrom as required by the Indiana law. The general arrangement of the plant is thus extremely simple and convenient.



American Coal Co.'s Plant at Bicknell, Ind.

The Shafts Are Large

The shafts are the largest thus far sunk in Indiana. They are lined with monolithic concrete down to the rock, and from thence, timbered. Cast-iron buntons are permanently set in the concrete of the main shaft. The curbing is heavily reinforced and carries the headframe.

The air shaft contains a full-sized hoisting compartment provided with a cage, equipped with a cast-iron

*Allen & Garcia, Chicago, Ill.

counterweight running in the air compartment. The hoist consists of a pair of second-motion Crawford & McCrimmon steam engines.

The fan built by the Jeffrey Mfg. Co. is steel housed and reversible. It is 12 ft. in diameter and 6 ft. wide, and was guaranteed to furnish 300,000 cu.ft. of air per minute at a 3-in. water gage when operating at a speed of 165 r.p.m. It is driven by a 17x18-in., single, slide-valve Chuse engine, provided with a wide-range Gardner governor with automatic stop. It is supplied with differential pulleys so as to operate at from 50 r.p.m. to 200 r.p.m. if required.

In order to make it possible to run the fan and hoist in case of a breakdown in the power plant, or while the plant is shut down, a small locomotive boiler is set in the fan-engine house, and piped up to the main steam line.

The rectangular office building includes a general office, superintendent's office, engineer's office, vault, wash room and pay vestibule.

The machine shop, like the engine and boiler house, is of saw-tooth construction, that is, one long saw tooth on the north front of the building. The walls are of brick, the trusses of steel, the roof of Federal cement tile, while Fenestra steel sash with factory ribbed glass forms the windows. The sills are of concrete, cast in place. The foundation is of concrete and the floor of clay. This same construction with slight variations was followed throughout the entire plant.

Down-Draft Forges Are Employed

The shop, which is operated by a line shaft from the engine house, is provided with one double and three single forges, all of the down-draft type and operated by two fans, one for the tuyeres and one for the smoke. Two longitudinal trolley beams with hand-operated trolleys and chain hoist are provided to handle mine cars, locomotives and heavy repair parts.

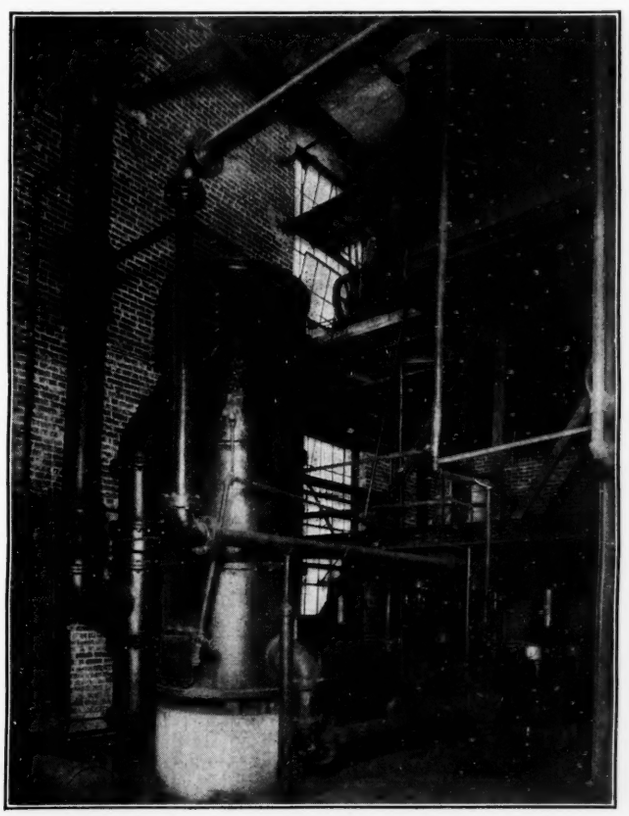
The power-plant buildings are similar in construction to the shop, the engine room being an exact duplicate thereof except for its concrete floor and basement, and some necessary changes in roof bracing and the location of doors and windows. The saw-tooth roof of the boiler house is so arranged as to bring the greatest height immediately over the breeching. The building is so designed that coal bunkers may be readily installed when needed. The fuel conveyor is set in a permanent location in the roof but the coal will be spouted to the floor as long as the boilers are being hand fired. The side of the building next to the tracks, however, is provided with coal openings under the windows, through which coal may be shoveled from railroad cars.

The boiler-house equipment consists of two 308-hp. Heine boilers, with settings so arranged that automatic stokers may be installed in the future. For the present the furnaces are equipped with "shear-klean" grates. It is intended as soon as power conditions warrant, to add two or three boilers with automatic stokers just west of the present building. The walls and roof will then be extended and the temporary end moved to its new location. Provision is made for the addition of these boilers in the piping layout.

The stack is only 50 ft. high and gives sufficient draft for operating the plant under light loads. The draft for regular service is provided by an induced-draft steel-plate fan 11 ft. 6 in. by 5 ft. 6 in. operated by a 12x12-in. inclosed vertical self-oiling engine. This fan is guaranteed to handle at least 105,000 cu.ft. of gas at a temperature of 520 deg. F. against a static pressure of 1¼ in. of water. It was furnished by the Buffalo Forge Co. and is located on an elevated steel framework over the boiler-feed pumps, thus taking up no floor space.

Induced Draft Was Cheaper Than Natural

It was found upon careful estimate that the induced-draft apparatus would cost a little less than a concrete or brick stack of sufficient height to carry the same load. It was adopted therefore on account of its elasticity under varying conditions, since the draft could then be made whatever was necessary without throttling the smoke outlet.



Heater, Boiler Feed Pumps and Induced-Draft Fan

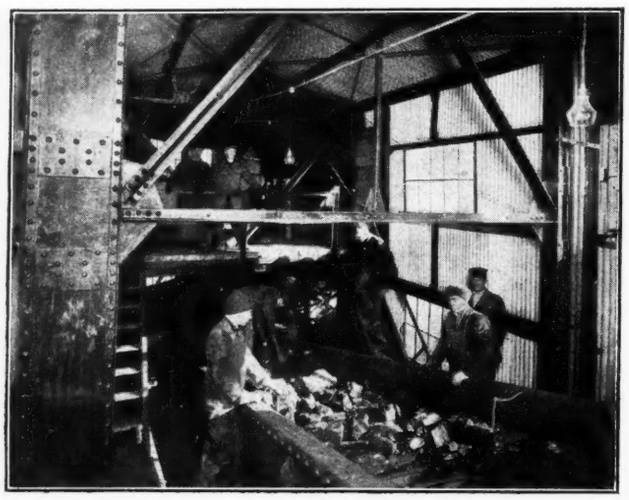
Operating at present at 40 r.p.m., this fan is furnishing sufficient draft for burning the cheapest grade of screenings under two boilers, and the steam consumed is practically negligible.

This is believed to be the first induced-draft mining plant in the Middle West, but it is not believed that it will be the last one, as the results thus far more than justify expectations.

Aside from the boiler-feed lines, which are of double strength, all pipe lines are of standard weight. Valves and fittings are, however, extra heavy. Each engine is provided with a large receiver separator attached directly to the throttle. The boiler-feed pumps are arranged so as to be interchangeable and to pump from the pond hotwell or heater either into the elevated tank or into the boilers. Arrangements are provided for a third pump when needed.

All condensation is trapped and returned to the hot-well. The exhaust steam from the generator engines, pump and induced-draft fan is used in the feed-water heater and the temperature of the feed water entering the boiler is constantly maintained between 205 deg. and 210 deg. F.

The exhaust from the hoisting engine is at present wasted, but it is expected in the future to carry it to a regenerator and use it in a low-pressure or mixed-flow turbine. The exhaust from the fan engine is not connected with the main exhaust header, but is used at present for heating the office and wash house and for humidifying the mine atmosphere.



PICKING AND DOCKING TABLE TAKING COAL TO SHAKER SCREENS

SIMPLE SLIDE-VALVE ENGINES ARE EMPLOYED

On account of the comparatively small initial power demand, and since it is expected in the future to use the exhaust steam in a low-pressure turbine, it was decided to use simple slide-valve engines on the generator units and for the fan. Accordingly a General Electric Co. alternator of 250-kv.-a. capacity is direct connected to an 18x20-in. Chuse engine operating at 200 r.p.m. The exciter for this unit is connected by silent chain drive.

A direct-current generator of 50-kv.-a. capacity is direct-connected to a 10x11-in. Chuse engine operating at 290 r.p.m. and is employed for charging the storage-battery locomotives. This generator is of the three-wire type, arranged to deliver current either at 125 or 250 volts. It can, therefore, charge the battery at either voltage that may prove desirable, operate a direct-current trolley haulage motor during the development period, and if necessary, excite the alternator should anything go wrong with the exciter or the silent chain drive.

Enough room is provided in the engine house for the addition of another alternating-current generator of from 300- to 500-kv.-a. capacity. Furthermore, the temporary end of the building may be taken down and any necessary extension made.

The 26x42-in. hoisting engines were designed and built by the Crawford & McCrimmon Co., of Brazil, Ind. They are provided with a 7-ft. cylindrical drum. The design of these engines embodies several excellent and unusual features. The valves are of the balanced double-ported type, giving quick admission and easy action, the friction being relieved by a pressure plate. The independent double-post brakes are located on opposite sides of the drum, one being operated by steam and one by hand. The reversing gear consists of a fixed link with a sliding block. This block is operated either by hand or by steam.

The tipple is of the "A. & G." type and is designed to load coal on four tracks. The first is for slack, either from 1¼-in. bar screens or 1¼-in. shaker screens, or for slack and nut; the second track loads mine run, bar screen 1¼-in. lump, or any size of shaker lump; the third track loads picked egg coal and egg and nut; while the fourth loads picked nut coal, or nut and slack.

The principal feature of the design is the arrangement whereby run-of-mine or 1¼-in. lump can be loaded on cars either directly or over picking tables and loading booms or by raising the loading boom to its high position, the tipple may be transformed to a shaker-screen outfit, making the regular prepared sizes with separate picking belts for the nut and egg coal which cannot be successfully picked before separation. The tipple is therefore practically two distinct units, each economical in operation and without superfluous parts.

THIS ARRANGEMENT IS EXTREMELY ELASTIC

The elasticity of this arrangement renders it possible to load 1¼-in. lump directly into a hopper or flat car and without delay pass every other mine-car load over the picking table to the shaker screen for making prepared sizes. This operation is carried on by the weigh man, alternately dumping the weigh pan forward and backward. All the coal can be fed over a 5-ft. picking table or the lump can be picked and the product of each mine car separately inspected, and the miners effectively docked for dirty coal.

The cages are of the "A. & G." "safety-first" type, and are operated by long overhead dumping levers giving slow, easy dumping under perfect control of the hoisting engineer. As it was found that no dump hook on the market would rapidly open the car door as soon as it was over the chute, a new one was designed. This hook seldom misses a dump and thus far has accomplished its object and given entire satisfaction.

The chute is sufficiently long above the screen bars to allow the coal to spread somewhat and the weigh pan is of the bottom-dumping type, avoiding breakage.

From the weigh pan, the coal can be discharged forward into the hopper of an apron feeder or backward into the same feeder, or by changing a gate, into the mine-run chute loading coal directly.

The 60-in. apron feeder is of heavy construction, being made of ⅜-in. plate with 5-in. interior-oiling wheels and full-length axles. It is geared to a 15-hp. variable-speed motor, giving speeds of from 20 to 60 ft. per minute.

A combined inspection and picking table and loading boom receives the coal from this feeder. It can be raised and lowered without seriously affecting the discharge. This table is self-contained, the motor being mounted upon it, and the walks for the pickers attached to the framework. The table is operated by a counterweighted hoist with duplicate chains and a system of gears and worm reducer and a 10-hp. motor. The speed of hoisting is 20 ft. per minute.

The picking table is geared from a variable-speed motor and moves at the rate of from 40 to 120 ft. per min.

By varying the relative speeds of the feeder and picking table, the coal can be fed as thin as desired, while a large output is being handled. When loading run-of-mine over the picking table, the slack passes through the feeder directly from the screens, and without the delay of weighing. Under usual operating conditions it will therefore go over the picking table just ahead of the lump, thus making easy picking and cleaning.

The Gob Is Used for Boiler Fuel

The gob from the picking table is deposited in a bin between the second and third tracks. This is arranged with chutes accessible from any position of the table. The discharge from this bin is 8 ft. above the track level, and the gob can be drawn off at intervals into small side-dump cars running on a narrow-gage track which convey it to the boiler house. This bin will eventually be used for rock only, and a chute will be built on the other side of the tipple leading to a small crusher discharging to an elevator to the boiler-house conveyor, so that all gob suitable for fuel can be taken care of at minimum expense and the rock can be loaded in cars and used for ballast or wasted.

The shaker screens are located at the end of the picking table, a chute being arranged to slip under this table at a point near the high position. This delivers the coal to the shaker screens, which are double-decked, suspended from trussed hangers and driven by forged-steel cranks.

The screens, which are 8 ft. wide and compact in design, are placed longitudinally above the lump track. The coal passes first over 2½-in. perforations then over 6-in. holes. The 2½-in. slack is rescreened on a lower deck having 1¼-in. openings. By this means much screening surface can be utilized on a comparatively small screen, and a large output handled.

The lump coal is discharged at the end of the screen over a telescoping chute into the lump car. The nut and egg are shaken out sidewise over secondary screens and delivered without breakage to the 40-in. rubber picking belts, which again discharge into hinged aprons with a minimum of breakage.

A Shaking Chute Delivers the Slack

The slack coal is delivered on track 1 by means of a side-shaking chute pitched at 18 deg. This is attached to the lower screen at one end and to independent hangers outside the building at the other. It is operated by separate cranks, its motion being exactly the same as that of the screen. A 6-in. screw conveyor projects alongside of it, delivering the degradation from the nut and egg chutes to the slack car.

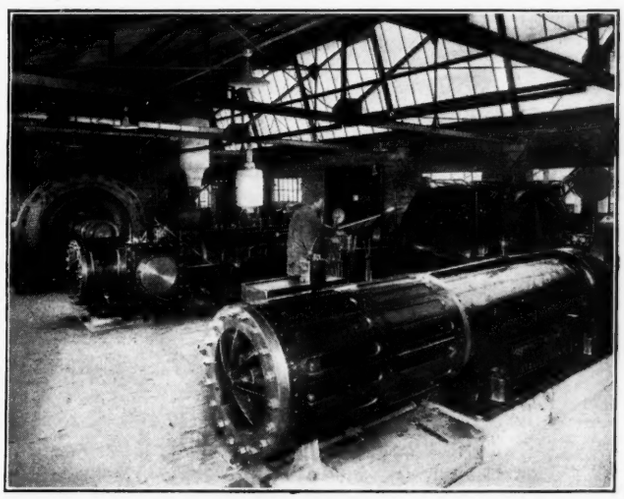
The crank drive is connected to the screens by heavy adjustable connecting-rods with brass boxes and is balanced by two 6-ft. flywheels. This gives great smoothness of operation, and although the screen structure is rigidly connected with the tower, there is scarcely any perceptible vibration when the screens are running. The variable-speed motor is geared direct to the driving shaft, giving a range of speed of from 40 to 110 r.p.m.

Both the slack chute and the casing for the screw conveyor are provided with gates just beyond the center line of columns. It is expected to install a flight conveyor under these gates should it ever become necessary to build a rescreener for the small sizes. This rescreener will be located down track from the tipple and over the first track.

In designing a plant, it is impossible to determine what the future will demand in the way of preparation of coal. Provision has been made, however, for future installation of crushers, which may be used for one or more of the following purposes: To limit the maximum size of lump, to increase the percentage of egg, nut and slack, to convert mine-run into slack, to make crusher-run lump for railroad use.

Alternating Current Is Employed

In describing the power house, the question of alternating current was passed over without special comment. As a matter of fact, this is the first plant in Indiana or Illinois to operate on alternating current from choice. One other plant is using alternating current for cutting, and is the pioneer in this respect; but in this case power is purchased, and the managers were therefore following the lines of least resistance in avoiding the losses of conversion to direct current. It is probable, however, that the American Coal Mining Co. would not have had the courage to install an alternating-current plant, except for the successful experience of this other concern.



Interior of Engine House

It is the intention therefore to do all cutting and to operate all top motors by alternating current at 240 volts. Transmission wiring was so calculated as to limit the voltage drop in a half-mile radius to 15 per cent. It is expected, therefore, that cutting machines will operate successfully at the primary voltage until the development of the mine carries the workings beyond this limit. A portion of the current will then be stepped up to 2300 volts, or a second generator installed at that voltage. The current will then be carried to transformer stations in each section of the mine in properly insulated or armored cables, where transformers will reduce it to the working voltage. When the radius of development is still further increased, the transformer stations will be moved out, or additional ones installed.

It is considered that there is no more danger in carrying high voltage into the mine in properly constructed cables than taking dynamite or powder down the shaft in sealed packages. If anything, it is believed that alternating current will be safer than direct, since the voltage on the exposed wires in the former will never exceed 240, while 275 is common practice in direct current.

The Workable Area Is Increased

By this means it is expected that the workable area and the life of the mine will be greatly increased and that the installation of one entire plant may be avoided. When other shafts are sunk, this initial plant will become the central power station, and alternating equipment can be made standard throughout the various mines. Furthermore, electric energy may be sold to neighboring towns and industries, and thus a possible market built up for energy instead of coal. The use of alternating current makes all these things possible.

With voltage troubles eliminated, it has been found that the machines operate more satisfactorily on alternating than on direct current. This has already been demonstrated at this plant. There is of course no argument as to the operation of top motors, and any coal producer would naturally prefer alternating current on account of the greater reliability of the motors and their freedom from brush and commutator troubles.

As to the haulage proposition, it is true that there is one serious objection to gathering by alternating-current locomotives—namely, switches and crossings of the double trolley wires. Storage-battery gathering locomotives are therefore employed, thus avoiding both wiring and bonding in the panel entries. In addition to this, these locomotives will be provided with a trolley, so that they may take current from a direct-current wire during development of the mine before the permanent haulage is installed. The problem of main haulage need not be met for several years; but, when haulage locomotives are required, alternating-current machines with two trolley wires on the main and cross entries can be installed.

The work of developing this plant in the field was done by company men under the direction of H. G. Conrad, superintendent, and Elmer Cross, foreman of construction. The plant was laid out, designed in every detail and supervised in the field by the Allen & Garcia Co., engineers, of Chicago.

Our Front Cover This Week

The two photos on our front cover this week show a general view of the mine of the Red Deer Valley Coal Co., Ltd., at Drumheller, Alberta, Can., and a large Marcus screen and picking table with which the plant is equipped. This is the largest Marcus screen ever manufactured by the English makers, Head, Wrightson & Co., being 76 ft. in length. The Roberts & Schaefer Co., Chicago, handles the Marcus screens and conveyors in this country. An extra-heavy propulsion gear was especially designed for this order. The coal mined by this company is a high-grade sub-bituminous, of great value to the rapidly growing Prairie provinces, the plant being equipped to handle 1000 tons per eight hours.

Shipments of Anthracite in February were 4,275,107 tons as compared with 4,121,451 tons in February, 1914, an increase of 153,656 tons. The month was warm both this year and last, but a few cold days at the end of February elicited the extra tons and reduced the amount of coal on hand at tidewater shipping ports from 798,125 tons on January 31 to 782,581 tons on February 28. The Lehigh Valley led in tonnage for the month with 887,267 tons; the Philadelphia & Reading was second with 693,743 tons; and the Lackawanna was third with 630,246 tons. The Delaware & Hudson carried 544,325 tons, the Erie 535,883 tons, the Jersey Central 473,928 tons, the Pennsylvania 372,374 tons, and the New York, Ontario & Western 137,341 tons.

Extracts from a Superintendent's Diary

Our camp is well supplied with inventors and near-inventors. We boast three citizens with patents granted, some half dozen who will hold similar honors as soon as they can induce capitalists to finance them, not to mention many others who have their ideas ready for draftsmen.

Of the three patents granted, one is a dinner bucket, one a mine-car door latch and the third a self-closing mine door. The father of the dinner bucket has been in possession of his patent papers for some years. Just after the patent was granted, he spent much of his time trying to decide just how he should dispose of the prodigious income soon to be his, but that time has long since passed and just now he would be willing to accept most any kind of an offer for his patent rights.

The inventor of the door latch has also decided that his dreams of great wealth were without foundation, but is still hopeful of receiving a moderate competency for his rights.

The owner of the patent covering the automatic door has only recently received his papers and he is still dwelling in the clouds unable to discredit the wildest flight of his imagination.

It required all of his savings account and a few extra dollars to pay the patent attorney's fee and he has decided to dispose of a sixtieth interest in his invention in order to obtain money with which to install a few doors for demonstrating purposes. They all pass through similar experiences, the unsuccessful ones; they start with a sixtieth interest and slowly increase their offer until a half interest is at stake; after that values fluctuate rapidly, and instead of thinking in millions, they begin to wonder where their children's meat and bread are to come from.

My first personal experience with inventors dates back to the time when I started out as a mining engineer. They (the inventors) were constantly after me trying to persuade me to get up drawings for them so that they might place their claims in the hands of attorneys. They were often successful with their pleadings and many a night have I found myself working over the drafting board with one or two enthusiasts at my elbows.

Between explanations they would always feel called upon to remark several times that there would be "millions in it" and they did so not to influence me or to spur me on with my task, but from the depths of their hearts. And if the drawing was a difficult one so that considerable time was required for its execution, I would learn much about the investor's future plans, especially as to how he would dispose of the millions that would soon be forthcoming.

Today a dejected looking individual in rags and tatters, plainly the worse for his cups, drifted into camp in search of any kind of employment. I recognized him the moment I laid eyes on him as the man who first induced me to try my hand at patent drawings. He did not recognize me and I managed to convince myself that nothing could be gained by making myself known to him, so I simply passed by without speaking. I regretted the decision almost immediately and went back in search of him, but he had disappeared.

I have not been able to dismiss him from my thoughts since; in his prime he was such an enthusiast, it seems unbelievable that he could live to be so entirely discredited

The Labor Situation

SYNOPSIS—The operators and the leaders of the miners in the New River district have come to an agreement, which is subject to the referendum. It provides that wages will be increased by the same percentage as in the central competitive field provided there is a general increase in that area within four years. The eastern Ohio situation still remains unchanged.

On Thursday, Mar. 18, after six weeks of conference between the operators and the labor representatives of the New River and the Winding Gulf fields of West Virginia, an agreement was reached at Cincinnati, Ohio, subject to the referendum of the miners. The old contract terminates on Apr. 1, and the new one is for four years. The scale for pick and machine mining is unchanged, and it is provided that it shall so remain unless "a general increase be paid in the central competitive field—viz., Illinois, Indiana, Ohio and western Pennsylvania." In case there is such an increase, "the operators shall voluntarily pay a corresponding percentage of increase for pick and machine mining and for all classes of day labor, both inside and outside the mines." The minimum scale for company men is as follows:

Water and machine haulers and drivers of one mule	$2.05
Drivers of two mules	2.16
Motor and machine runners	2.55
Tracklayers	2.43
Tracklayer's helpers	2.00
Slate shooters	2.28
Couplers	1.18
Greasers	1.08
Trappers	1.00
All other inside day labor	2.00

Provisions to Insure Steady Work in New River Contract

Negotiations for a new contract must commence 60 days before the old instrument expires, and if no agreement is reached the miners shall work for 30 days beyond the date of expiration. But the new contract shall retroact so as to be in force from the day when the old contract expires.

Grievances shall be submitted to the mine foreman, mine superintendent and general manager in turn, and in case of continued disagreement the matter in dispute shall be submitted for adjudication to two permanent commissioners, one chosen by the miners and the other by the operators. Upon their failure the case shall be submitted to a permanent umpire chosen by the persons whose names are attached to the agreement.

The mines are to be run "open shop," with no discrimination against those who do and those who do not belong to a union. Pay-day must be semimonthly, and 9-hr. work at the face is to constitute a day. Regular inside workers are to receive 2-hr. pay if they are ordered to the mine and not provided with work for a longer period of time.

Fines and Discharges Are Provided

Where the coal is weighed the deduction for slate, bone, sulphur or other impurities shall not be less than 250 lb. nor more than 500 lb., and where it is paid for by the car the same proportion shall prevail. For the second offense the miner may be suspended one working day or fined $1.

For the third and each subsequent offense in any one calendar month he may be suspended, discharged or fined $2.50 at the option of the superintendent. But in case of malicious or aggravated cases the superintendent shall have power to suspend or discharge for the first or any subsequent offense.

Conditions Limiting Abstentions from Work

No miner may absent himself from work for two consecutive days, without permission from the mine foreman, nor must he persist in working irregularly. If he does, "it shall be construed as sufficient cause for discharge."

It is provided that "under no circumstances shall the operator recognize or treat with any miners or representatives of miners during a suspension of work in violation of this contract." During any strike or suspension all men engaged in work which does not produce coal for shipment shall continue to work when so desired, and such miners as are necessary to supply boilers or the local domestic consumption must also continue to work on demand.

Ohio Report Published

President Wilson has recommended that both sides in the eastern Ohio strike submit their differences to arbitration. It is believed the President will soon send a letter to both parties and outline such a plan of action. This is confidently expected by operators, who have desired to arbitrate their scale for the past few months. But as stated it was the miners who refused to arbitrate.

A draft of the personal conclusions of Daniel J. Keefe and Hywell Davies, the two federal mediators who investigated the situation in Ohio, has been completed and placed in the hands of President Wilson and is now made public. It cites the facts, but really draws no "conclusions," though there are three long paragraphs so headed. Yet it must be conceded that there is one conclusion drawn, and that is that "nothing further can be done at this time." The public wanted to know whether the miners or operators were right; but as the miners were wrong, a report which said anything definite would be clearly impolitic.

As the commissioners had completed their investigation in the middle of February, they have had over a month to produce the colorless document they now submit. It may be surmised that the longer it was submitted to the light in the secretariat of labor, the more the conclusions were bleached out of it.

The Gallagher Amendment Has Hard Sailing

The Gallagher amendment to the Ohio antiscreen law, which permits operators and miners to contract without reference to the mine-run basis and which was passed by the Ohio Senate, has been under fire before the mining committee of the Ohio House of Representatives. A public hearing was held last week when William Green, the author of the mine-run law, appeared for the miners. He made a strong speech defending the law from the charges of eastern Ohio operators. The committee has finally reported the bill out without recommendation, and it is expected that it will be made a special order some time in the near future.

At a meeting of the Cuyahoga County legislative delegation held recently, C. E. Maurer, of the Glen's Run Coal Co., a leading eastern Ohio operator, stated that the operators and coal miners had set aside the antiscreen law in certain sections of Ohio. He said that the present law discriminated against the eastern Ohio miners and permitted union organizers to destroy the industry in Ohio for the benefit of Pennsylvania and Indiana. The Gallagher bill simply restores to miners and operators the right of contract.

The amendment to the constitution under which the antiscreen law was based was passed by a subterfuge, according to Mr. Maurer. He further charged that the original draft of the bill providing for the appointment of a commission to make a study of the coal-mining industry has been changed so as to provide for a "representative of the operators" instead of a "representative operator."

Eastern Kentucky Strike Not Important

The trouble in eastern Kentucky is at an end. The Middle Creek Coal Co., it proves, was the only company affected, and while it is a leader in Floyd County it employs only about 40 men. It made a proposition to its men that they accept a reduction of 20 per cent. in their wages, so that the company could get some low-price business. The men had been working two days a week, and the company represented that at a lowered wage better time would be secured. The company shut down the mine for four days at the end of the week. As the men protested against the reduction, the mine resumed irregular operation on the old scale.

The Colonial Coal Co. employees, we are informed, were not affected by the strike. As there has been no reduction in wage, it is not likely that the trouble will extend. Had there been a decrease in the rate of pay, some of the competitors of the Middle Creek Coal Co. might well have been tempted to follow, and eventually the other operators might have thereby been stampeded, much against their will, into following suit. Lower wages in the end would help no one.

Small Mazda Lamps with Concentrated Filaments

The distinctive features of the concentrated filament Mazda lamps of high wattages have proved so popular that the Edison Lamp Works of the General Electric Co. has developed vacuum Mazda lamps of similar appearance in the 25-, 40- and 60-watt sizes. This concentrated filament construction gives greater vertical distribution of light than the regular Mazda lamps of corresponding wattages.

These lamps will have bulbs of the same size as regular Mazda lamps of corresponding wattage and will give the same spherical illumination per watt. Their rated average life will be 600 hours.

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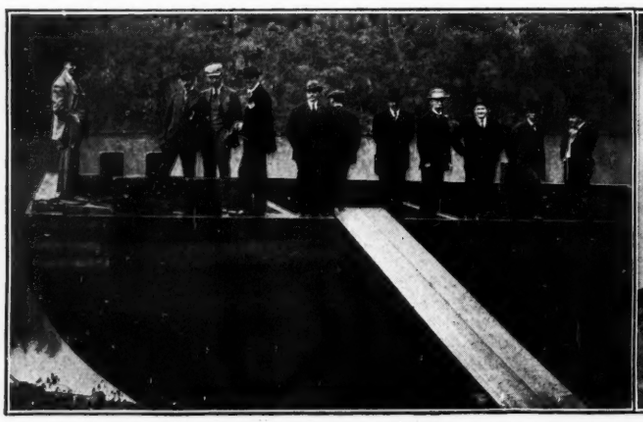

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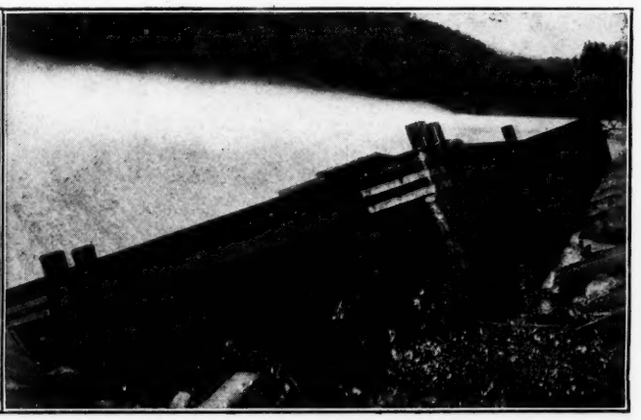

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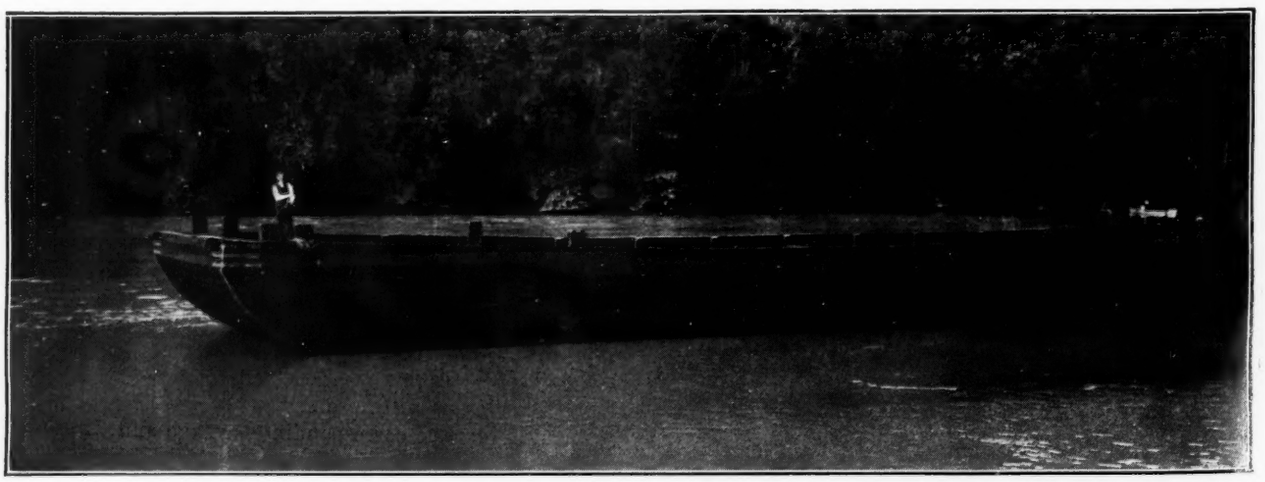

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A New Mine Fire Engine

A late addition to the apparatus designed for fire protection for coal and copper mines is the Kanawha air-pressure mine fire engine. This machine is designed and manufactured by James Boyd & Bro., Inc., of Philadelphia, which firm has long specialized on fire-protection equipment.

The apparatus consists of a chemical tank of any desired capacity, in which the fire-extinguishing solution is contained. The size of this tank is dependent upon the space available in the mine. Two separate cylinders holding compressed air under pressure of 1000 lb. per sq.in. are connected to the chemical tank. By opening a valve, the compressed air enters the chemical tank through an automatic regulator, which maintains the pressure in the chemical tank at any desired amount, and the air forces the chemical solution through the discharge hose and nozzle at this uniform pressure.

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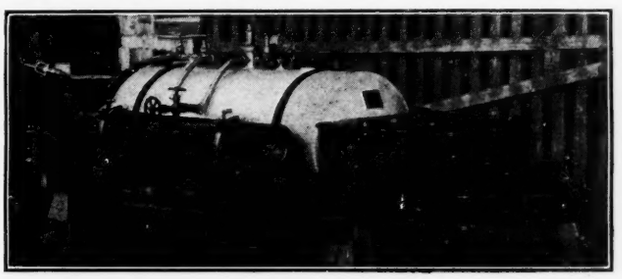
Extra air cylinders fully charged accompany each set of apparatus and all air cylinders are interchangeable. For recharging these cylinders when they become empty



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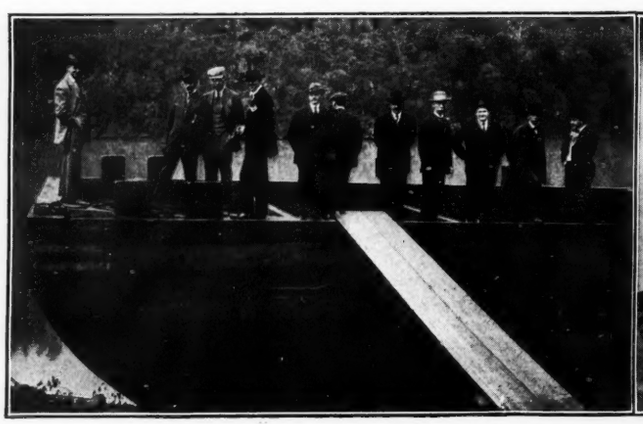

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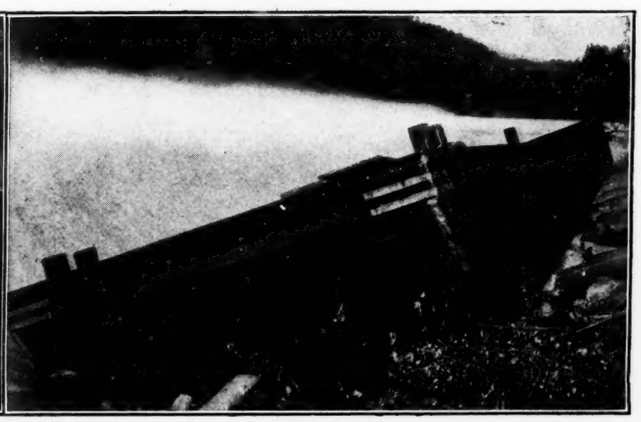

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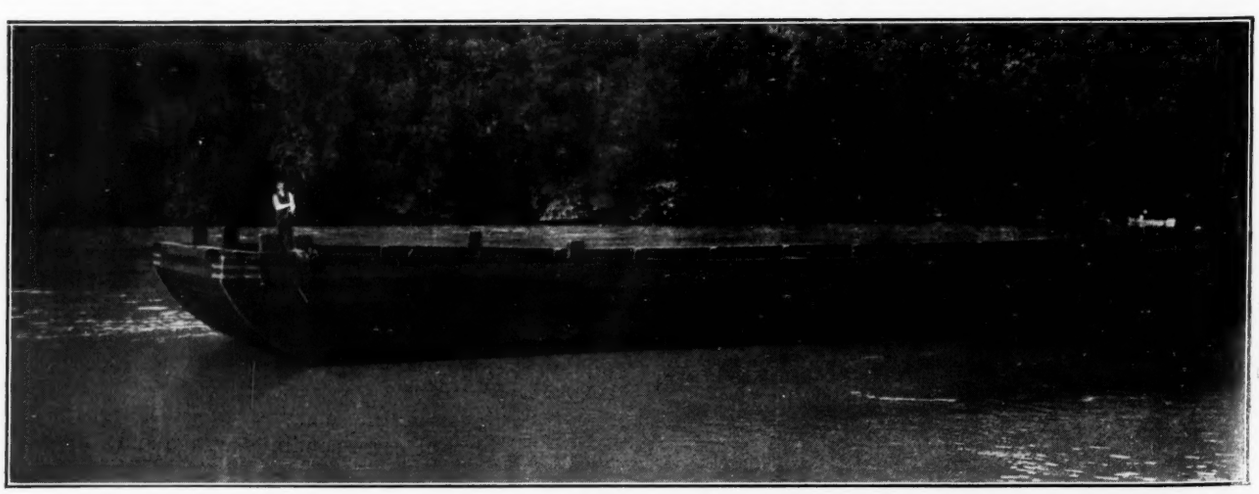

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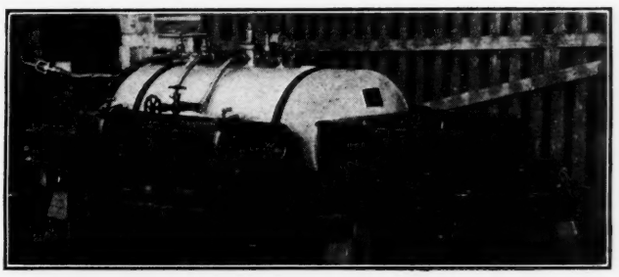

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A British View on Our Export Opportunities--I

By G. Breffit*

SYNOPSIS—Prospective American exporters of coal will be interested in the following English views of our possibilities in the foreign markets. It must be agreed that the British have a more intimate knowledge of the world's coal markets than we can hope to acquire for years to come. Mr. Breffit has not only been an important figure in the British export trade, but has devoted a great deal of time to a personal investigation of the opportunities for American coals in the foreign markets. His knowledge of the subject is, therefore, peculiarly unique.

The official returns of the coal production, consumption, etc., show that the United States, Great Britain and Germany are always responsible for about five-sixths of the total production and for a similar proportion of the total exports (see Table A). These proportions vary but slightly year by year.

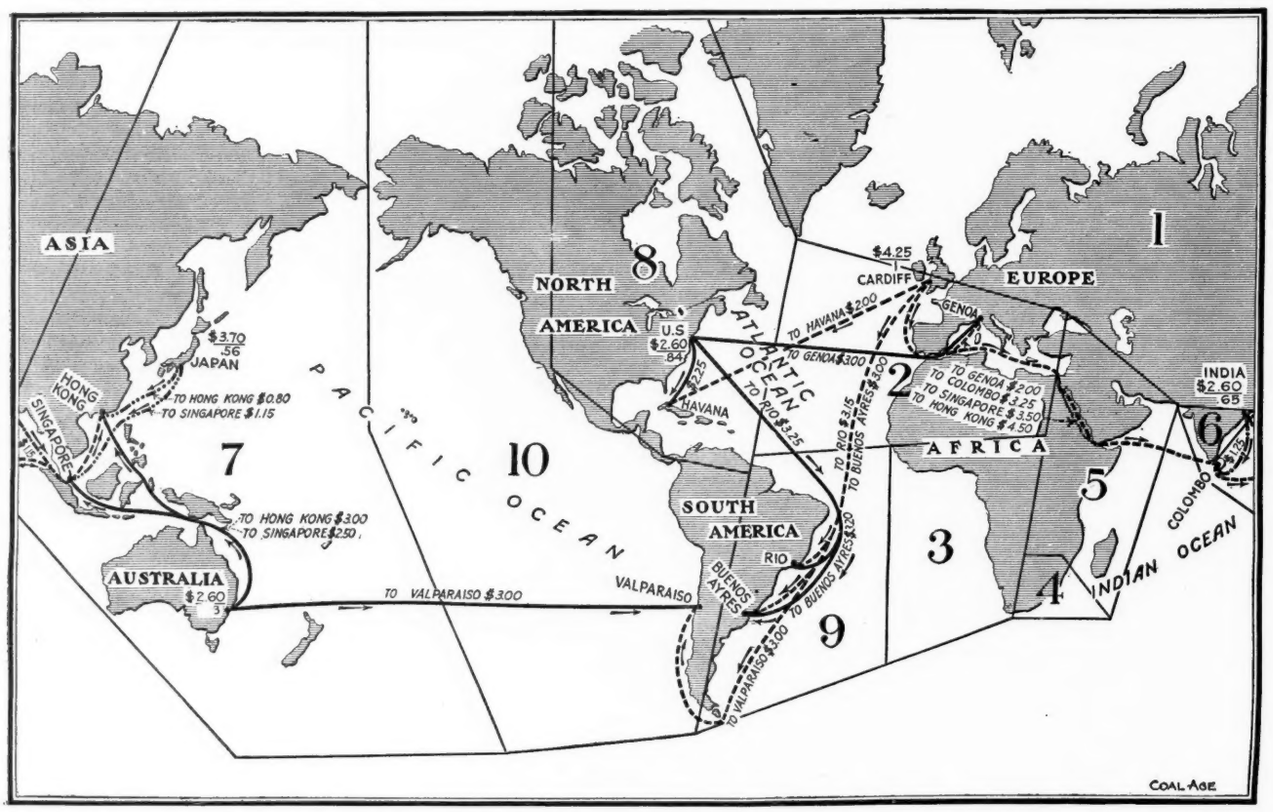
United States	$1.34
United Kingdom	1.75
Germany	1.90
Belgium	2.39
France	2.53

The figures relating to the first three will be found in greater detail on the accompanying diagram and Table B. The same tendency is observable in the separate states of the United States. This is shown in the accompanying Table C, giving the production of bituminous coal in each state arranged in order of the value per ton.

All differential values are no doubt in a great measure attributable to the geographical situation, which cannot be altered; but some may be owing to unnecessary competition and this can be remedied.

That proper organization can accomplish much is seen in the improved condition of the German prices since the formation of the Westphalian Syndicate. And in this connection it must be remembered that that syndicate controls only about one-half of the total production of Germany.

On reference to Table B it will be seen that during the



Map Showing a Subdivision of the World's Coal Markets, Routes, Freight Rates and Costs of Coal

But it is a curious coincidence, and may be something more than coincidence, that there is a distinct tendency toward a lower relative value per ton of coal raised as a country grows in relative importance. For instance, the average values realized (per ton at mine) during the past 28 years by the five principal countries work out:

10 years from 1885 to 1894 (in which latter year the syndicate was formed) the values of German coals approximated very closely those of Great Britain, the average for this period (taking the British figure as unity) being represented by the ratio 100: 99.5. During the 18 years from 1895 to 1912 (the syndicate being in operation) the average values of each (again taking the British figure

*20 Broad St., New York City.

as unity) are represented by the ratio of 100: 113.4, so that the management of the Westphalian syndicate may fairly claim to have bettered German prices by 14 per cent.

The Germans deserve all the more credit in the improvement of their relative position in that they start under natural disadvantages. Their seams of coal, it is true, are thick and numerous, but the quality is inferior, the coal is much broken (lump coal running only from 20 to 25 per cent.) and very dirty. By a system of cleaning and sizing they have prepared their coal to such good purpose that they have already secured some of the South Wales trade. One of the chief reasons for this is that by their more scientific method of handling they are in a position to guarantee an exact repetition of any delivery that has given satisfaction.

They have profited also by emulating the British policy of export, and the British are now (though very slowly) returning the compliment by giving attention to the German treatment of coal for the market.

A study of the operations and methods in both Germany and Great Britain might be very profitable to the United States.

Economies in Consumption

Further advantage would, I think, result from the exercise of a policy never yet (as far as I am aware) adopted by anyone. It is sometimes said that the more wasteful a consumer is the more coal he has to buy, and so much the better for the coal owner. But it has been abundantly proved that, with each economy effected in burning, there has been a direct increase in the demand; though there may be a limit to this, it is undoubtedly a long way off, as regards the cost of power derived from coal compared with human or animal labor.

There is, too, plenty of room for further economies, for even now we only obtain 10 or 12 per cent. of the theoretical equivalent of the heat developed in coal combustion. If, therefore, it be granted that such economies increase the trade, and therefore the profits to the mining company, it is reasonable to recommend the establishment of a department for the acquisition, and dissemination among consumers, of all knowledge tending to economy in consumption.

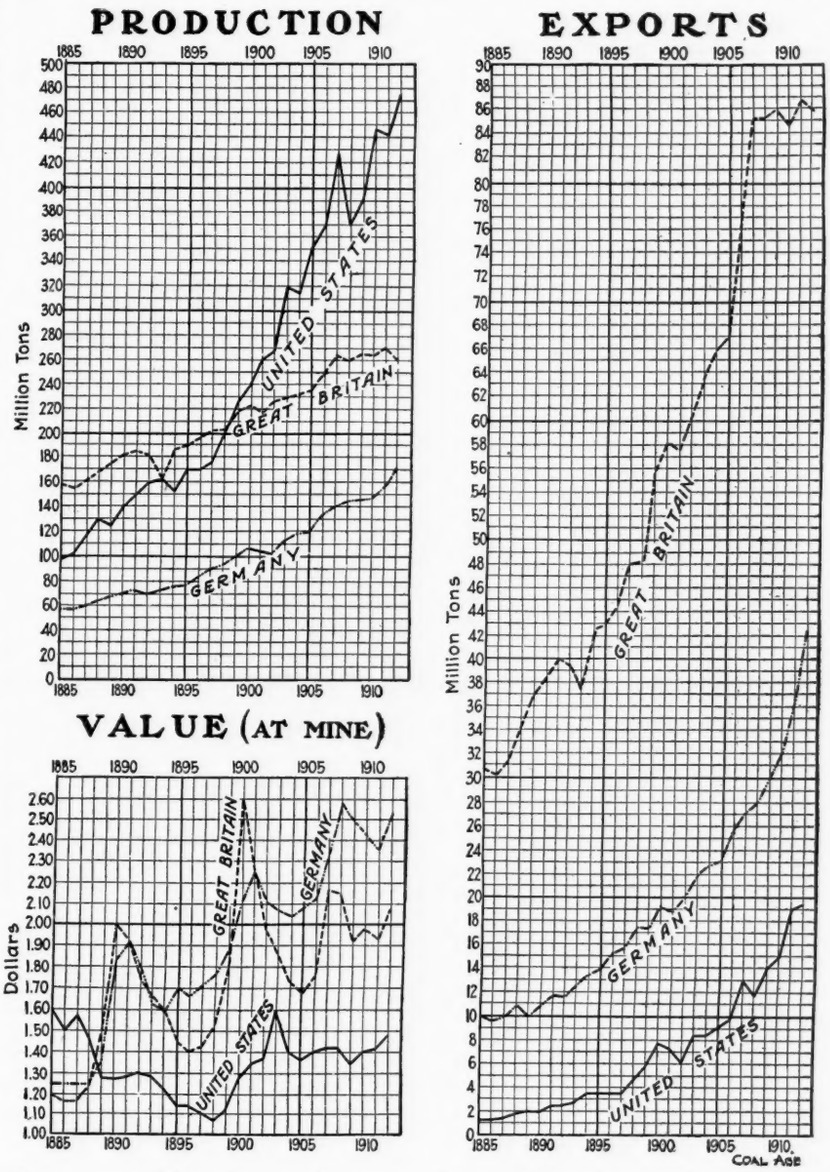
I have found in my own experience that a judicious mixture of two or more coals will often produce a better result in steam-raising (and so bring a higher price) than either of the same coals used separately. A similar betterment is also shown in mixing coals for the manufacture of coke, as is well known.

Coal Reserves of the World

The estimated quantities of unworked coal are, at best, only rough guides. To show the unreliability of even careful compilations we have only to turn to the reports of the British Coal Commissions of 1871 and 1903, where the estimated resources of Great Britain appear in the latter as larger than in the former—notwithstanding the working of nearly 6000 million tons between the two periods.

According to the most recent estimates the reserves of coal not exceeding 4000 ft. in depth are estimated about as follows: 140,000 million tons in Great Britain; 100,000 million tons in Germany; 20,000 million tons in France; 18,000 million tons in Belgium.

The resources of the U. S. are known to be enormous; so much so that, notwithstanding the rapid rate of development, there has even yet been scarcely sufficient inroad made to afford anything approaching a determination of the quantity remaining. The number and the thickness of



Production, Exports and Value of Coal for Different Countries

TABLE B. AVERAGE VALUE PER TON (AT MINE) OF COAL PRODUCED EACH YEAR

	United States	United Kingdom	Germany		United States	United Kingdom	Germany
1885....	$1.60	$1.24	$1.24½	1895....	$1.14½	$1.45	$1.70
1886....	1.52½	1.16	1.24½	1896....	1.14½	1.40½	1.66
1887....	1.56½	1.15½	1.24	1897....	1.11	1.42	1.71
1888....	1.44	1.21½	1.25	1898....	1.06	1.52½	1.77
1889....	1.27	1.52½	1.37	1899....	1.13	1.82	1.87
1890....	1.25½	1.98	1.84	1900....	1.27½	2.59	2.12
1891....	1.27	1.92	1.92	1901....	1.33	2.24½	2.24
1892....	1.29½	1.74½	1.77	1902....	1.36½	1.97½	2.12
1893....	1.28	1.63	1.62	1903....	1.58	1.84	2.06½
1894*...	1.22	1.60	1.59½	1904....	1.41½	1.73	2.05
				1905....	1.36	1.67	2.07½
Av. 10 Years.	$1.372	$1.517	$1.5095	1906....	1.39	1.75	2.14
				1907....	1.43	2.16	2.33½
				1908....	1.43½	2.14	2.59
				1909....	1.35	1.93½	2.49½
				1910....	1.40½	1.96½	2.44
				1911....	1.41½	1.95½	2.38
				1912....	1.46	2.17½	2.52½
				Av. 18 years.	$1.3222	$1.875	$2.127
				Av. 28 years.	$1.34	$1.75	$1.90

* Westphalian syndicate was formed in this year.

TABLE A. BALANCE SHEETS OF THE PRINCIPAL COAL PRODUCING COUNTRIES FOR 1885, 1895, 1905 AND 1912 (000 OMITTED)

	1885				1895				1905				1912			
	Production	Imports	Consumption	Exports	Production	Imports	Consumption	Exports	Production	Imports	Consumption	Exports	Production	Imports	Consumption	Exports
Production exceeding consumption:																
U. S.	99,250	822	98,800	1,272	172,426	1,226	169,969	3,683	350,821	1,648	343,280	9,189	477,202	1,793	459,488	19,507
U. K.	159,351	.....	128,585	30,766	189,661	14	146,768	42,907	236,129	49	169,017	67,161	260,416	209	174,782	85,843
Germany	57,383	2590	50,049	9,924	77,897	5,845	69,609	14,133	119,349	10,589	106,715	23,223	172,065	11,347	140,741	42,671
Belgium	17,158	1,254	12,752	5,660	20,121	2,104	15,803	6,422	21,506	4,811	19,661	6,656	.....	.....	.....	.....
Japan	1,294	10	722	582	4,767	69	2,991	1,845	11,630	352	9,466	2,516	17,349*	222*	12,348*	5,223*
India	.....	.....	.....	.....	.....	.....	.....	.....	8,425	187	7,775	837	14,706	734	14,559	881
Australia	3,096	.....	2,014	1,082	4,290	.....	2,970	1,320	7,496	8	5,478	2,026	11,730	16	7,923	3,823
Transvaal	.....	.....	.....	.....	1,012	.....	1,012	.....	2,327	65	2,220	172	4,243			
Natal	.....	.....	.....	.....	158	.....	94	64	1,129	2	535	596	2,469			
Orange River	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	469	67	5,892	1,423
Cape of Good Hope	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	67			
Consumption exceeding production																
France	18,763	10,526	28,786	503	27,140	10,925	36,870	1,195	34,778	13,376	46,046	2,108	39,745	21,286	58,624	2,407
Russia	4,187	1,797	5,980	4	8,846	2,202	11,040	8	16,957	3,990	20,890	57	25,998*	5,816*	31,719*	95*
India	1,294	806	2,099	1	3,540	787	4,246	81	.....	.....	.....	.....	.....	.....	.....	.....
Belgium	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22,603	9,955	25,364	7,194
Austria	8,201	2,484	10,006	679	10,618	5,305	15,097	826	13,530	7,224	19,390	1,364	15,418*	11,902*	26,110*	1,210*
Canada	1,715	1,734	3,021	428	3,106	2,706	4,820	992	7,836	6,635	13,029	1,442	12,958	13,659	24,781	1,836
Spain	904	1,460	2,360	4	1,711	1,842	3,545	8	3,152	2,409	5,559	2	3,605*	2,541*	6,140*	6*
New Zealand	511	131	592	50	727	108	742	93	1,586	169	1,632	123	2,178	364	2,312	230
Sweden	171	1,162	1,333	.....	220	1,973	2,193	.....	317	3,429	3,746	.....	355	5,012	5,367	.....
Cape of Good Hope	15	98	113	.....	77	108	185	.....	147	251	398	.....	.....	.....	.....	.....
	373,293	24,874	347,212	50,955	526,317	35,214	487,954	73,577	837,115	55,194	774,837	117,472	1,083,576	84,923	996,150	172,349
	398,167		398,167		561,531		561,531		892,309		892,309		1,168,499		1,168,499	
	Production			Exports	Production			Exports	Production			Exports	Production			Exports
U. S., U. K. and Germany	84.64%			82.36%	83.41%			82.50%	84.37%			84.73%	83.95%			85.85%
France and Belgium	9.62%			12.10%	8.98%			10.35%	6.72%			7.46%	5.75%			5.57%

* These figures are for 1911.

TABLE C. BITUMINOUS COAL PRODUCTION, 1907

State	Short Tons	Value*	State	Short Tons	Value*
West Virginia	48,092,000	$0.99	North Dakota	348,000	$1.61
Virginia	4,711,000	1.02	Iowa	7,574,000	1.62
Pennsylvania	150,143,000	1.03	Missouri	3,998,000	1.63
Illinois	51,317,000	1.06	Arkansas	2,670,000	1.67
Kentucky	10,753,000	1.06	Texas	1,648,000	1.68
Indiana	13,986,000	1.08	Michigan	2,036,000	1.80
Ohio	32,142,000	1.10	Montana	2,017,000	1.94
Maryland	5,533,000	1.20	Oklahoma	3,643,000	2.04
Tennessee	6,810,000	1.24	Washington	3,681,000	2.08
Alabama	14,250,000	1.29	Oregon	71,000	2.34
Georgia	362,000	1.38	California and Alaska	24,000	3.83
Colorado	10,790,000	1.39	Idaho	8,000	4.09
New Mexico	2,629,000	1.46			
Kansas	7,322,000	1.52			
Utah	1,948,000	1.52	Total	394,759,000	Average $1.14
Wyoming	6,253,000	1.55			

*Per ton at the mine.

the seams may or may not equal those of the principal European countries, but the *areas* of the respective coalfields are outside comparison. The coalfield of the state of West Virginia alone contains a greater number of square miles than the *combined* coal-areas of Great Britain, Germany, France and Belgium.

The only other coalfields able to rival in magnitude those of the United States are in Central Asia. But the development of these is likely to proceed but slowly, and their geographical position is somewhat inconvenient for exportation to other countries.

Explanation of Map

The map on p. 538 illustrates the method by which the competitive ability of various coalfields may be determined. Before attempting to enter a fresh market a merchant should be conversant with its other possible sources of supply, and should ascertain:

The calorific value of each coal.

The physical condition of each.

The price f.o.b. shipping port.

The cost of transportation to the point of delivery in question.

A knowledge of these points will indicate the highest price obtainable in that market for a specified heating power, which is the measure of competition.

On this map five widely different coalfields are shown, with the relative f.o.b. prices and degree of excellence of a general type of coal from each field; also the relative ocean freights from each to several ports (as examples) where competition may be expected.

The Five Coal Fields	Prices per Ton F.O.B.	Relative Heating Power	Resultant Comparative Ratio
Cardiff	$4.25	1.00	$4.25
U. S. A.	2.60	0.84	3.10
Australia	2.60	0.68	3.82
India	2.60	0.65	4.00
Japan	3.70	0.56	6.60

Adding to the figures in the last column the rates of freight shown on each route of the map, the following table of competition is reached:

	Genoa	Rio	Buenos Aires	Valraiso	Havana	Colombo	Singapore	Hongkong
Cardiff	$6.25	$7.40	$7.25	$7.25	$6.25	$7.50	$7.75	$8.75
U. S. A.	6.10	6.35	6.30	..	5.35	..	..	..
Australia	..	..	..	6.82	..	..	6.32	6.82
India	..	..	..	..	..	5.25	5.15	..
Japan	..	..	..	..	..	..	7.75	7.40

It should be noted that the prices and freights tabled above (although based on actual averages over the same period) are too general in their character to be of practical value. It is only desired here to show the method by which information of practical value is obtainable.

(*To be Continued*)

Practical Rules for Cutting Mine Timber

By Bernard Carr*

SYNOPSIS—Some simple rules suited for occupational-school instruction, together with some arbitrary standards for the notching of timbers, which latter may well evoke discussion.

The following suggestions or rules are offered to the young miner or timberman to assist him in cutting and placing mine timber in flat seams with maximum economy and minimum labor.

To Find the Bevel on the Heel

To find the bevel which should be cut on the heel of the leg of a timber set where the timber is 12 in. in diameter, divide the spread of the leg in inches by the length of the leg in feet. Cut the notches in the collar level. This rule will be found perfect for timber 12 in. in diameter, regardless of the length or spread of the leg.

Ques.—A gangway in a mine is timbered with a collar the notches of which are 7 ft. apart and two 9-ft. legs spread 11½ ft. apart; timber 12 in. in diameter. What is the bevel on the heel of the legs?

Ans.—The spread of each leg (11½ — 7) ÷ 2 = 2¼ ft., or 27 in.; 27 in. ÷ 9 (the length of the leg in feet) = 3 in., which is the bevel of each leg.

Putting this in the shape of a formula we have

$$B = \frac{S}{L}$$

in which B is the bevel in inches, S the spread of the leg in inches and L the length of the leg in feet. If stood on a mudsill as shown in the diagram, Fig. 1, the timber will have the same bevel, top and bottom.

Cutting Crooked Timber

In cutting the bevel in a crooked piece of timber, the miner's method for determining its equal sides should be used. It is illustrated in Fig. 3. This method is as follows: Place a knife in the ring at the end of the tape and stick it in the center of the end of the timber to be cut as at A. Measure the front side of the leg to the required length and mark it with a piece of chalk at B. Swing the tape to the back of the timber and make another mark as at C.

Then from this last mark in the back of the timber measure down the bevel distance, 2, 3 or 4 in., whatever the required bevel may be as determined from the foregoing rule. It will be found that this bevel, BD, will fit perfectly.

*Foreman, Lattimer Stripping, Drifton Colliery, Drifton, Penn.

NOTE—From the "Employees' Magazine," published by the Lehigh Valley Coal Co.

Replacing a Broken Leg

When one of the legs in a set of timber is broken and the other leg and collar are good, the broken leg may be replaced as follows: After putting a brace under the collar as shown in the diagram, Fig. 4b, chop out the broken leg. Hang the plumb from the notch in the collar to the floor of the gangway to obtain a vertical, and then measure in inches the distance from the plumb over to the hole in which the leg stands. This will give the spread which, divided by the length of the leg (in feet), will give the bevel to be cut on the new leg if the timber is 12 in. in diameter.

For instance, if the length of the leg is 8 ft. and the spread 20 in., the bevel will be 20 ÷ 8 = 2½ in.

Bevel for Timber of Any Diameter

The foregoing rules for obtaining the bevel to be cut on the heel of the leg was figured for timber 12 in. in diameter. The bevel on the heel of any leg will vary as the length of the leg and also as its diameter. Given the length of the leg and its spread, the bevel can be found from the formula $B = \frac{S}{L}$. This bevel will be based on timber 12 in. in diameter. Then by proportion and by comparing the diameter and bevels, the desired bevel may be found. For instance, suppose the diameter of the timber in the first example, whose legs were 9 ft. long and

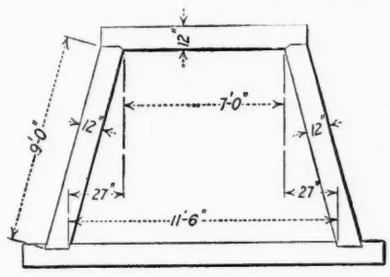


FIG. 1.

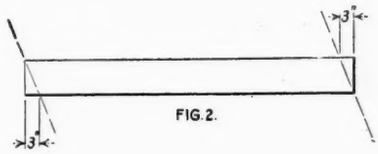


FIG. 2.

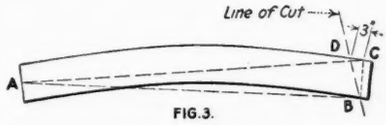


FIG. 3.

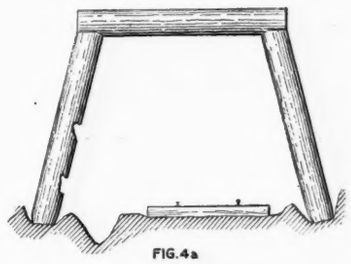


FIG. 4a

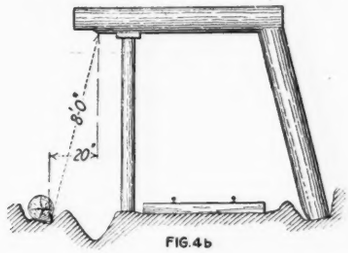


FIG. 4b

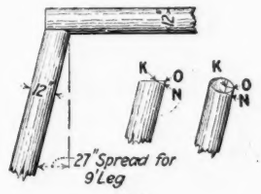


FIG. 5.

Hints for Mine Carpenters for Use When Shaping Timber Sets

spread 27 in., was 18 in. instead of 12 in. First find the bevel for 12-in. timber from the formula $B = \frac{S}{L} = \frac{27}{9} =$ 3 in. Then $12:3::18:x$ and $x = 4\frac{1}{2}$ in.

For 8-in. timber the proportion would be similar: $12:3::8:x$, and $x = 2$ in.

Thus it may be seen that regardless of the length or spread of the leg the correct bevel for 12-in. timber is found from $\frac{S}{L}$, and by proportion the bevel for timber of any diameter is readily determined.

Depth of Notch in Collar

The depth of the notch in the collar, like the spread of the leg, varies with local conditions. As a general rule, however, the depth of the notch should not exceed ¼ the diameter of the collar. That is, a collar 12 in. in diameter will have its notch cut $12 \div 4 = 3$ in. deep.

All collars should be cut with a bevel to rest on the facing of the leg. This bevel in the collar *ON*, see Fig. 5, should be at least ⅛ in. for each inch of diameter of the collar. Thus, for a 12-in. collar the bevel will be $\frac{1}{8}^2 = 1\frac{1}{2}$ in.

Facing the Front of Leg

To find the facing *KO*, see Fig. 5, on the front of the leg, add the bevel on the collar *ON* to the bevel on the heel of the leg. Thus, for 12-in. timber the facing should be 3 in. + 1½ in. = 4½ inches.

The length of the collar is the distance between the notches plus twice the diameter of the timber.

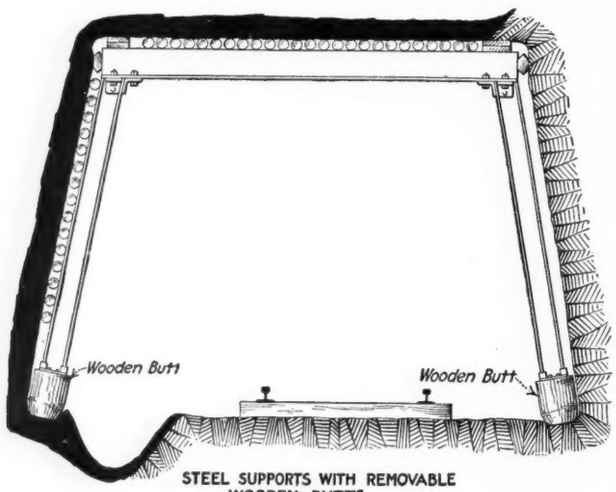
Though the foregoing figures were based on timber 12 in. in diameter, the rules will be found to work through proportion for any size of timber used.

Removing Some Objections to Steel Supports in Mines

By Frank H. Wagner*

SYNOPSIS—Some of the objections to steel sets and the manner in which these may be avoided by the use of wooden peg legs.

Steel supports are now generally supplanting wooden timber in the mines, especially in places requiring strong, permanent sets such as at the foot of slopes and shafts, in pump rooms, main intakes and returns, and other similar places of a more or less permanent character.



STEEL SUPPORTS WITH REMOVABLE WOODEN BUTTS

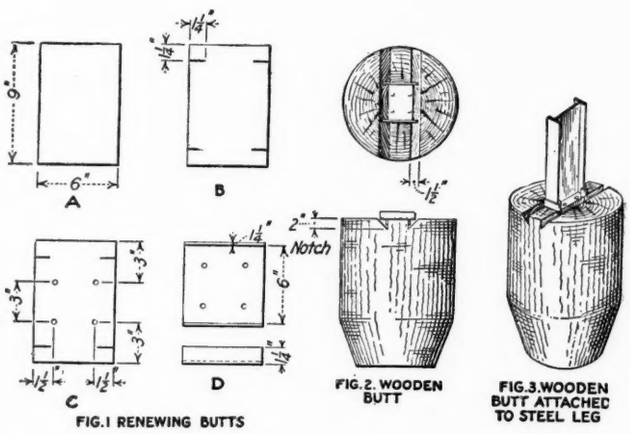


FIG. 1 RENEWING BUTTS

FIG. 2. WOODEN BUTT

FIG. 3. WOODEN BUTT ATTACHED TO STEEL LEG

Instead of Placing Steel Sets on Concrete or Rock Foundations, They May Be Supported by Wooden Butts, Which Are Readily Movable, Prevent Corrosion and Increase the Elasticity of the Support

The Difficulties

The objections offered to the use of steel supports, however, are: (1) It takes longer time and greater skill to handle and erect them; (2) the length of the legs cannot be readily or easily altered to fit the hitches, for the legs must be specially prepared to offer a firm foundation for the cement and base plate; (3) the feet of the struts and base plates, in wet localities, are subject to the corrosive action of mine water; (4) should a slight movement of the roof or bottom of the tunnel or gangway occur, the collar or legs of a steel set because of their lack of resiliency will often become bent so that their replacement is necessary, and this substitution of new for old sets is in itself another objectionable feature because it takes much time and skill, especially if the bolts and nuts have been bent or corroded.

The Cure

To overcome all of the foregoing difficulties the introduction of a wooden block or timber butt is suggested by J. M. Humphrey, mining engineer. These blocks or timber butts are found in quantities as waste in the timber yards and they could easily be shaped to take any hitch and be cut to any desired length, thus eliminating at once

*Mining engineer's office, Lehigh Valley Coal Co.
NOTE—From the "Employees' Magazine" published by the Lehigh Valley Coal Co.

the inconvenience of a fixed leg length, the cutting of steel, or the making of new hitches.

These timber butts or blocks would also act somewhat as cushions for the steel legs and under heavy pressure would crush or give away before the steel collar or legs would bend and thus save the steel. The action of mine water along the bottom would be spent on the wooden butts and not on the iron base or foot of the steel legs. Wood will resist the action of mine water much better than iron or steel. However, even if the wooden butts do begin to corrode or rot they could more easily be replaced than a base plate or a leg and at less cost.

Renewing Butts

In renewing butts the collar can be jacked up, the old block knocked out and a new one easily fitted and inserted. A piece of 1¼-in. flanged sheet steel could be used as a base plate to join the leg and block. The design of the plate is shown in Fig. 1, from which it can be seen that a 6-in. I-beam leg would take a standard plate of 9 × 6 in. as indicated by (A) Fig. 1. In (B), (C), and (D) in the same figure are shown the gradual steps in making the base plate, from stamping the four ¼-in. slots to drilling the spike holes and shaping the ends for holding together the blocks and leg. Fig. 2 shows the plates spiked or screwed to the butt ready to receive the end of the leg, and Fig. 3 shows the base-plate flanges bent around the end of the leg to hold it firmly in position.

The Silicrete Process of Mending Coke Ovens

Hitherto there has been only one way to repair a coke oven, and that was to rebuild it. The oven was allowed to cool down, and after being razed it was built again, as at first, at much cost for labor and material and with a further loss resulting in the oven lying idle. The first recharge was usually not up to standard, so the loss was considerable.

Moreover, the oven when rebuilt had porous fireclay joints. As a result the fire had an opportunity to get at the body of the lining and to melt not only the face but the beds and sides of the brick. The fireclay, being less resistant to heat than the bricks which it cemented together, would flux freely and leave the material which it should protect subject to the full effect of the fire.

Sealing the Oven While Still Hot

The owners of the cement-gun have recently made some most successful experiments on the repair of byproduct coke ovens under heat. By changing the nozzle the cement-gun can be used to place a lining of fine silica (torpedo) sand and ground fireclay in a white-hot oven. The heat of the oven immediately fuses this mixture into a glass which coats the brick and fills up the joints.

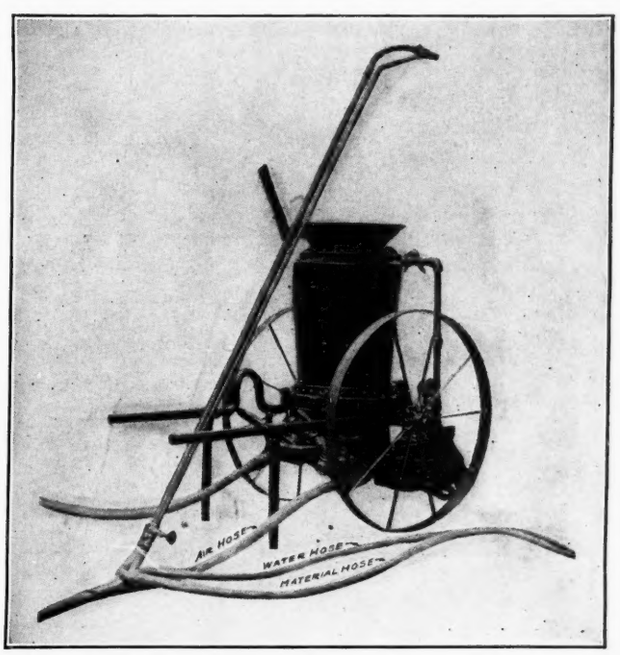
It has been found in practice that a mixture of 85 per cent. of fine silica sand and 15 per cent. of ground fireclay gives the best results. The dry mixture is placed in the hopper of the gun, and compressed air at about 35-lb. pressure is used for forcing the mixture to the nozzle, where a little atomized water is added.

This aggregate, called by the patentees "silicrete," is forced into the cracks, and if the oven is hot enough it will immediately fuse and bond itself to the walls of the furnace, sealing all crevices perfectly. A patent has been taken out providing for the use of an acetylene flame for fusing the mixture wherever it is necessary to apply it to a cold oven.

Nozzles Deliver Silicrete Where Desired

Of course the silicrete has to be delivered by the nozzle just where it is needed; hence, extension nozzles 6, 12 and 18 ft. long, or even more, are provided. Where large repairs are necessary the nozzles may be water-jacketed, but for ordinary repairs this is not necessary, as the action is rapid and the capacity adequate to make a satisfactory patch before the heat melts the nozzle.

The machine is light, weighing only about 400 lb. It can easily be pulled by a man from one part of the plant to another. The principle and construction of



The Cement Gun Adapted for Silicreting Oven Interiors under Heat

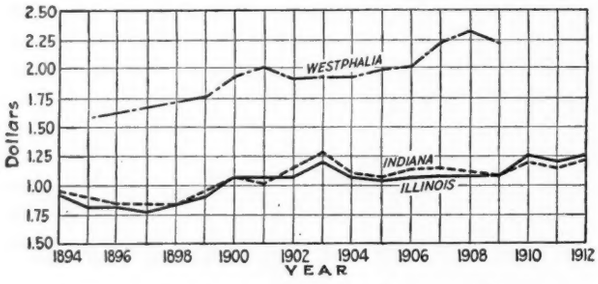
the machine follow closely the lines of the cement-gun, but the nozzle is different, and only one hopper, or air-lock, is provided. This makes it necessary to stop the operation between charges, which takes only a fraction of a minute; but where continuous operation is desired the larger machine with two hoppers is recommended. For such work the operator of the nozzle should use an asbestos mask and gloves. Two men are needed to operate the machine—one man at the gun and one at the nozzle.

The force with which the material is delivered has the same effect with silicrete as with gunite. A denser aggregate is obtained, and this is an advantage, as it prevents the flame in the furnace or oven thus coated from penetrating beyond the facing of the oven lining. The patentees state that the method of silicreting just described has already been used in two places on byproduct ovens with entire success. The manufacturer of the apparatus is the Cement-Gun Co., Inc., of 30 Church St., New York City.

A Lesson from Germany*

SYNOPSIS—The operators of the Middle West contrast conditions in their coal field with those in Westphalia, where prices are regulated by a syndicate, with a result which appears satisfactory to all parties concerned.

In the commerce of the world we in the United States have established ourselves in a manner unparalleled by any other nation. However, in gaining our supremacy we have not found it necessary to economize our resources, but have ruthlessly destroyed the heritage belonging to ourselves and our children. If we are to keep our place in the commercial world we must learn the lesson of economy, and we need offer no apology if we propose to learn this lesson in part from the Old World nations which have been forced by stern necessity to conserve



AVERAGE PRICE PER TON OF COAL AT TIPPLE

Selling price has increased from 1894 to 1912, in Westphalia 75c.; in Indiana and Illinois, 30c. per ton.

every resource in order to support their dense populations.

WESTPHALIAN SYNDICATE PROVED BENEFICIAL

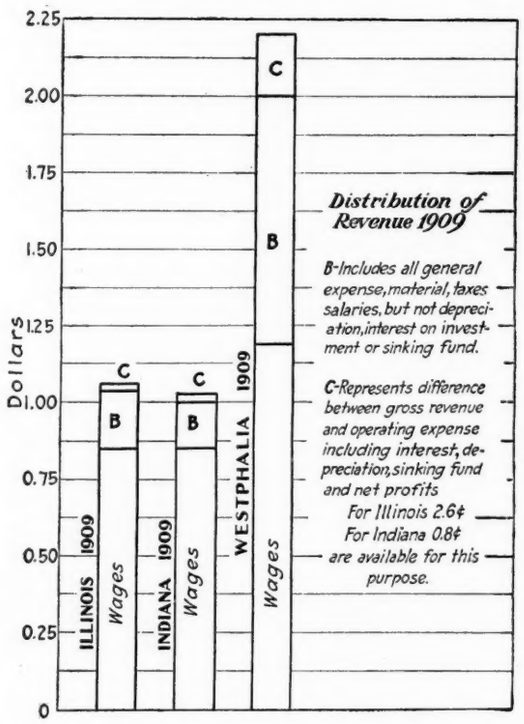
One notable example is the Westphalian Syndicate of Germany; and it is especially a case in point because at the time of the organization of the syndicate the circumstances were similar to those existing in America at present. It is possible, therefore, that we may profit by a study of the means whereby the people of Westphalia, after enduring a most disastrous and trying period extending over 30 years, solved a difficult problem.

As early as 1850 the mine operators of the Westphalian district suffered from severe competition resulting from overproduction, and various efforts were made to find relief. Price agreements, which were forbidden by the German law, were disregarded, notwithstanding the heavy penalties imposed for violations. Finally in 1885 the Westphalian Syndicate was established, and continues to the present date. It is a selling organization without any property and only a nominal working capital.

MANNER OF ADMINISTRATION

Its affairs are administered by an official who has no financial interest in the mines and acts as chairman of a board made up of one representative from each participating company. The function of the syndicate is to sell the product of the mines, coke ovens and briquetting plants and to allot to each company the tonnage which it should produce.

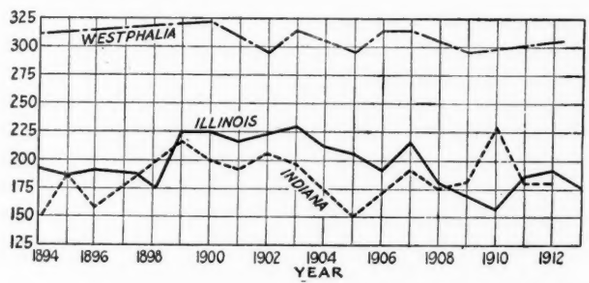
Twice each year an estimate of the probable requirements is made, and a tonnage is allotted to each company based upon previous production after allowance has been made for the tonnage of companies, such as railroad, furnace and other such corporations, which consume a part of their own production.


Dollars
ILLINOIS 1909
INDIANA 1909
WESTPHALIA 1909
Wages
B
C
Distribution of Revenue 1909
B-Includes all general expense, material, taxes salaries, but not depreciation, interest on investment or sinking fund.
C-Represents difference between gross revenue and operating expense including interest, depreciation, sinking fund and net profits
For Illinois 2.6¢
For Indiana 0.8¢
are available for this purpose.

ITEM C IS THE CREAM FOR WHICH THE OPERATOR IS STRIVING

Note how much larger it is in Westphalia than in the Middle West. In Illinois and Indiana what cream there is is more than absorbed by the demands made on it to pay interest, depreciation and amortization.

On May 1 each company is notified how much coal it will be called upon to furnish during the second half of the calendar year, and each mine can make its arrangements for the most economical production of the tonnage called for. Any company falling short in its supply, if market conditions continue as anticipated, must pay damages for the shortage unless the deficit can be made up by another company.



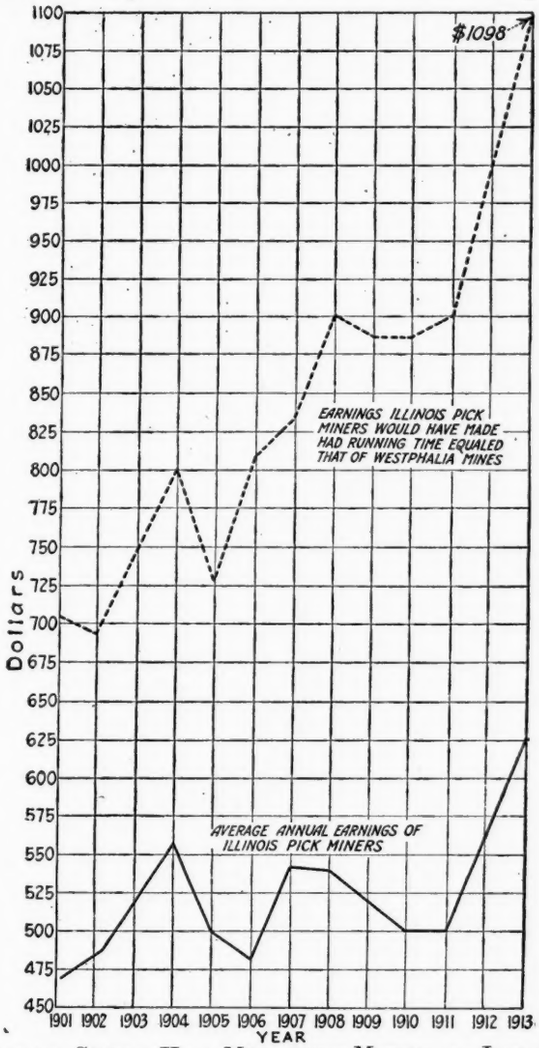
AVERAGE NUMBER OF SHIFTS WORKED PER ANNUM BY ALL MINE EMPLOYEES

*This article is a concluding note in "A Statement of Facts Concerning Conditions in the Bituminous Coal Industry in the States of Illinois and Indiana," the major part of which appeared in last week's issue of "Coal Age," on pp. 498-501.

Methods of Marketing

Losses due to inferior preparation are borne by the company responsible for the defect. Prices are agreed upon and fixed in advance semi-annually and take into account the quality of coal produced from each mine, making it immaterial to the purchaser where the coal comes from, because of the adjustment of price to the intrinsic value of the material sold.

It has sometimes happened that by some unforeseen condition the syndicate was not able to market through its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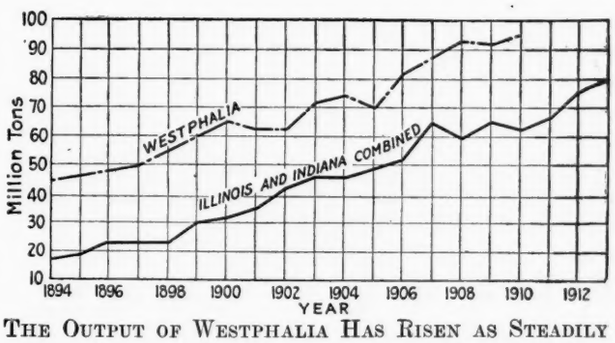
EARNINGS ILLINOIS PICK MINERS WOULD HAVE MADE HAD RUNNING TIME EQUALED THAT OF WESTPHALIA MINES
AVERAGE ANNUAL EARNINGS OF ILLINOIS PICK MINERS
Dollars
YEAR

Diagram Shows How Much the Miners of Illinois Would Have Made for a Year's Labor Had They Worked as Steadily as Those of Westphalia

ordinary trade channels the estimated quantities of coal, and other markets had to be entered in order to permit the mines to operate under the most economical conditions. Losses due to these difficulties are borne alike by all, the syndicate paying to the participants the price agreed upon, having retained a commission, from which all deficits are paid.

The advantages of a single seller marketing 50,000,000 tons of coal a year are apparent. Markets are available to the syndicate which individual operators could not reach. Its contracts are made for five-year periods, and this assures an income to the operators and enables



The Output of Westphalia Has Risen as Steadily as That of Illinois and Indiana Despite the Better Prices Obtained

them to finance their properties and engage in business which, while more remunerative, requires larger investments. Thus they have erected large coking, byproduct and briquetting plants. Such financing would be impossible with the uncertainties of ordinary competition.

What Has Been Done with Profits

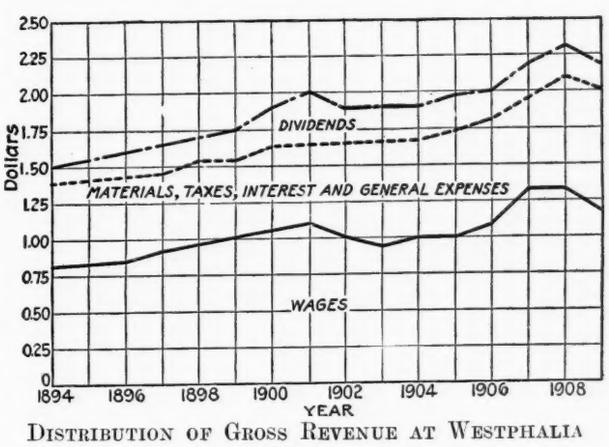
The higher returns have made possible an expenditure of money for improved equipment, safety measures and labor-saving devices quite unknown in this country. Complete extraction of coal is required by the government, and it is estimated that the cost of flushing to sustain overlying strata and to permit of the removal of all coal adds 25c. per ton to the production cost.

The coal operators are enabled to provide funds for the protection of the injured employees and for the support of the families of those fatally injured. They also provide pensions for the incapacitated and the aged. The cost of this social insurance in 1909 added 20c. per ton to the cost of production.

No protest has been made by the consumer against the higher coal prices which have followed the establishment of the syndicate. The increase in price has been generally accepted as the best expedient for solving a most vexatious question. Undoubtedly it induced more care and economy in the use of coal and resulted in the adoption of more economical engines and improved boiler settings.

Average Capitalization $4,200,000

The Westphalia production increased from 1,665,000 in 1850 to 81,000,000 tons in 1907; at the same time the number of companies was reduced from 100 to 76, indicat-



Distribution of Gross Revenue at Westphalia Mines

ing growth of individual companies and concentration of capital. The 17 companies in the syndicate the output of which was sold for commercial use and which were not allied with fuel-consuming industries had an aggregate annual production of 28,000,000 tons and a capitalization of $72,450,000, which is an average of $4,200,000 each.

This indicates an investment for plant and equipment of $2.50 for every ton of annual production. The capital account does not include any outlay for coal land, as all the coal belongs to the government. For Illinois the capital invested in 1909 was $1.49 and in Indiana $2.44 per ton of annual production. This latter, however, includes the coal rights, which represent the major portion of the investment.

Coal Exhibits at the Panama-Pacific Exposition

By C. P. Kane

The Panama-Pacific International Exposition was opened with elaborate ceremonies on Feb. 20, and great enthusiasm was manifested by the 250,000 people who crowded through the gates.

The great coal industry has been given a prominent place in the exhibit section, where 80,000 exhibitors have vied with each other in making attractive displays of everything on top of and under the surface of the earth.

The Palace of Mines and Metallurgy at the exposition, which covers five acres of ground area, contains numerous features of interest to coal miners. The most interesting is the mine, which has been installed by the United States Bureau of Mines. Shafts and tunnels, of the full width common to actual mine workings, have been excavated in the sand beneath the building and timbered in the usual way. Visitors are conducted through the workings, where they may see all of the important details of actual mining operations in actual progress.

The Utah Coal Exhibit

Among the most interesting displays in the great Palace of Mines and Metallurgy at the Panama-Pacific Exposition is the Utah Coal Exhibit. Five of the leading coal-mining and selling corporations with headquarters in the State of Utah have combined forces and installed a striking joint exhibit. These are: The Utah Fuel Co., the Consolidated Fuel Co., the Independent Coal Co., the Standard Fuel Co., and the Spring Canyon Coal Co. A complete assortment of coals from the mines and plants of these concerns is attractively displayed in a large booth. The most striking feature of this exhibit is an obelisk, which is constructed entirely of large blocks of coal. Many visitors are attracted by this display, which was installed under the supervision of A. C. Watts, chief engineer of the Utah Fuel Co., who is in charge of the exhibit.

The H. C. Frick Coke Co. Exhibit

A representative showing is made by the H. C. Frick Coke Co. and allied companies in the large exhibit made by the U. S. Steel Corporation. The main feature of interest is a complete working model of a modern coking plant, the model being 16x25 ft. and $\frac{1}{16}$th full size. It is practically a reproduction of the Phillips plant at Uniontown, Penn., which has a capacity of 3500 tons of coke daily.

There is a steel headframe of modern design set over a concrete-lined double-compartment shaft, together with a steel coal bin having a storage capacity of 1000 tons. The equipment includes an operating steam hoist. At one end and in proper relation to the headframe and coal bin is a complete arrangement of surface tracks connecting with the various parts of the plant, all ballasted and laid out in proper order. There is shown a carpenter shop, blacksmith shop and a material yard in which are seen lumber, wood props for use underground, steel rails and ties, sets of steel mine timbers, steel mine props and steel ventilating pipe.

A sanitary drinking fountain, an elevated steel water tank, hydrant, hosehouse and hose-drying tower are of interest. In one corner of the model are an emergency hospital, a lamphouse with the interior shown, and a modern miners' bathhouse with a glass roof to permit a clear view of the interior. Numerous safety devices are shown in various portions of the exhibit. A boiler house with a concrete stack is seen. The stack has a ladder leading to the top, equipped with a cage which is a safety device to prevent accidents. Water-tube boilers of 1500 hp. capacity are shown in the boiler house. The steam in these is generated by means of heat from the hot gases of the coke ovens, conducted from the ovens by flues. An operating steel fan, which is reversible, is shown and is equipped with an engine having sufficient power to drive from either side in the case of failure of one unit.

A number of beehive coke ovens are installed, at the ends of which are seen half-oven interiors complete in all details of construction. The coke is withdrawn and loaded in steel railroad cars by a model of a Covington coke extracting and conveying machine. The models throw off light as ovens do in actual service. The operation of larries between coal bin and ovens, the hoisting engine and the raising and lowering of the self-dumping cages are realistically shown. In the movie theater which is a part of the general exhibit is a set of films which depict the complete story of coal, including proper and improper methods of mining and other work in connection with the coke-making industry.

A channel section, 8 ft. 7 in. high and 18 in. square, from the famous Pittsburgh, or Connellsville, seam of coal is shown as well as cubical samples from other localities in which the various subsidiary companies of the corporation operate.

The exhibit was installed under the supervision of Thos. W. Dawson of Scottdale, Penn., assistant chief engineer for the Frick Co.

Scope of Mine-Safety Laws—A helper employed by a miner who has a contract with an operator for removal of coal is entitled to the benefit of statutes requiring mine operators to take precautions for the safety of miners. (United States Circuit Court of Appeals, Second Circuit; Yensavage vs. Lehigh Valley Coal Co., 218 Federal Reporter, 547.)

Proof of Negligence in Personal Injury Cases—The mere fact that a miner was injured by a defective coal-pit car cannot raise any inference of negligence on the part of the operator in failing to provide a reasonably safe brake on the car; negligence must be established by affirmative proof. (United States Circuit Court of Appeals, Third Circuit; Stepanovich vs. Pittsburg & Baltimore Coal Co., 218 Federal Reporter, 604.)

Safety of Working Platforms—A coal company may be found to have been guilty of negligence in requiring an employee to work upon an elevated platform, the floor of which consisted of unsecured boards, rendering the company liable for resulting injury to him. (Florida Supreme Court; Hasty vs. Logan Coal & Supply Co., 67 Southern Reporter, 72.)

Editorials

A Lesson from Germany

In this issue of COAL AGE is published an illuminating article on the Westphalian Coal Syndicate. It shows what marvelous changes have come over the coal business in that duchy as a result of coöperation. And yet it is just because we do not think Westphalian conditions will be exactly duplicated here that we feel disposed to wish success to the attempts of the Middle Western operators to replace competition by coöperation.

It is not probable that with our good friend Carl Scholz as a leader and with a representative of the government on the directing board prices of coal would be doubled as has happened in Germany since 1886. It is unlikely that the tonnage per man employed would drop, as in Germany, 1 per cent. or even more in a quarter of century of invention, organization and capital increase. Nor is it to be anticipated that American corporations would have capital accounts running as high as $2.50 per ton of production exclusive of the value of their coal holdings.

In fact, the danger is not that we shall be too German but too American. We may find that in place of King Log (the Sherman Act) we shall have King Stork (government regulation), which as the railroads have found "eats 'em all alive." Coöperation has its advantages; but when, for fear that such confederations will be arbitrary, governmental regulation is permitted to enter, we are obliged to consider, *"Quis custodiet custodes?"* (Who is going to control the guardians?).

The government is likely to be so unreasonable that our present state of trade strife would be far preferable to the actual conditions under academic restraint. The frogs in the pond, according to the fabulist, devoured one another in those early days when good King Log lay motionless at the water's edge. But one unlucky day they prayed to the gods for a monarch of some spirit, and King Stork was sent to reign over them. He regulated matters, but hardly to the liking of the denizens of the pond.

We are socialistic enough to believe that some day there will be both coöperation and governmental regulation and that it will work well because the public will have more reason and the capitalists less greed. But we cannot feel too hopeful at present, even though the public and the capitalists have both much progressed in recent years.

The crimes of the New York, Lake Erie & Western R.R. in its early days are hardly likely to be repeated today, nor is the public likely to be as criminal as the citizens of Erie in particular and Pennsylvania in general who tried to prevent the railroad from changing its gage in the hope that the traffic in Pennsylvania might outstrip the traffic of New York State and in order that the village of Erie might grow fat on the transfer of freight and the feeding of delayed passengers.

But still, despite the fact that these difficulties have to be confronted, we do need some scheme like that proposed to increase the profits in industry. The lack of profit makes the workingman give up all hopes of saving. Why should he save if he can get as much for a dollar today as that dollar would bring after ten years of increment? He argues, "Why not live from hand to mouth?" The profits of safe and sane business are so small, the rates of interest offered by banks are so low that the workingman either speculates or spends; he rarely decides to invest in reliable securities.

In fact, there is a probability that if industry does not make better offers to the investor the great war may put its hands on the savings of America; for the man of war will offer large interest if by that means he can obtain the wherewithal to fit himself for the struggle.

And truly, if profits abroad are going to be so much more liberal than those in the United States, the money of Europeans will not be invested here, and our capital will be expended in foreign enterprises. It is coöperation and its assurance of profits which will make a frugal people and invite foreign capital. For this reason the attempt of the Middle West operators to combine and raise prices, as far as the law will permit and reason declare to be equitable, is to be commended.

Efficiency

The foreign mine expert on his arrival in America travels around the mines here and in Canada and goes away saying there is nothing to see. A great disappointment is this mining community with the largest coal production in the world. The reason lies in the difference in ideals. Something for which the new countries are constantly striving, whether they be American, African or Australasian, seems not to fill the eye of the older countries to nearly so great a degree.

The newer communities specialize on efficiency, but not equally on every kind. For instance, the American does not seek with the same energy as does the European a place of leadership in percentage extraction of coal. Recently an apt illustration of this was disclosed. While one of our governmental bureaus has been desiring most commendably that we should conserve our resources, another, the Reclamation Service, has opened up a mine, and being a producing, not an advisory body, it leaves two or three feet of good lignite in the roof for support. (*Bureau of Mines Bulletin 22,* p. 661.) And the Reclamation Service was possibly justified in its practice, and still is if it continues that method of roof support without change, even though it does not have to meet competition in the operation of its mine and though it could therefore be seeking conservation as a truer end of operation than mere low cost per ton delivered.

The American aim centers on the tonnage per man employed, and the striking success in this matter is what should surprise the stranger who visits our mines. But it does not strike his attention, because there is nothing imposing in a tonnage sheet. Large head-frames, spacious buildings, elaborate and powerful machinery, pretty villages with parked areas—these are impressive to the

stranger; but to the capitalist, after he has had time to get his bearings, they appeal with less force. He wants to obtain coal at low cost to meet competition, and in the new countries specified he is getting what he is striving after.

Of course there are other ideals. They are well worthy of consideration, and the American does not belittle them; and as far as he has approached them, he is proud of his achievement. But the principal success has been the production of coal at minimum human effort.

Let us compare the tonnage per man employed in the various fields of the world:

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Kentucky	745	Russia	173
Alabama	720	Belgium	173
Washington	669	Spain	162
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The figures for the tonnage per man in the United States are taken from the report of the U. S. Geological Survey for 1913; those for all other countries are excerpted from a British Board of Trade Report and are for 1912, except in the case of Russia (1909), Spain and Japan (1911). These latter figures, of course, have been multiplied by 1.12 so as to obtain the equivalent in short tons.

Of course this order of precedence in economy of human labor varies from year to year according, largely, to the number of days worked. Thus, for instance, in 1912 West Virginia, being second, led the state from which it was originally dismembered, and Wyoming stood third in the list. In 1911 the output per man in Great Britain was 291 tons and that of the German Empire 278 tons, reversing the order of 1912. In many states and countries the tonnages are low because of the irregular call for coal where the main demand is for domestic use. In such communities, low output spells not inefficiency but diversity of occupation. The farmer has added mining to his ordinary vocation.

But the fact that every state in this Union leads every European country is significant, look at it as you may. And the leadership is obtained despite the fact that the mines of the American continent do not work with, by any means, exemplary regularity. Still some allowance must be made for the deeper workings, more contorted measures, more perfect preparation of coal and more back-filling and flushing in the European mines. But these difficulties extenuate rather than explain. Smaller cars and haulage units, union restrictions, lower speeds and less use of mining machinery are the real reasons for the lowered human efficiency in the coal operations across the Atlantic.

In fine, it has been observed that the genius of the American machine is in capacity, that the merit of the English is in ruggedness and that the predominant quality of the German is ingenuity and delicacy. The American mechanism performs great service with little watching. The English machine frequently does less, but seems to live forever. The German machine is often complicated, but usually not needlessly so. The reason for the complexity is that the German has a delight in modeling those types of machinery which demand complication and refinement of detail.

Prospects in the Lake Trade

Thirty-three and a third per cent. of the coal shipped to upper lake ports during the navigation season of 1914 is still on the docks. There is no inquiry for early lake shipments of coal and there is not likely to be much shipping until well into May.

Iron-ore mining and transporting materially increase or decrease the demand for coal in the Northwest. So far there has not even been an inquiry for ore from the furnaces of the central states. A number of the iron-ore companies have not issued their 1915 analysis books upon which purchasers base their calculations. No prices have been made, and the outlook is far from promising for an early ore market.

It is impossible to forecast the probable volume of lake coal business for the season with the markets in such an uncertain condition. It is doubtful whether the lake coal market will be very brisk until late in June or early in July. The only prophecy that can be made with safety is that the early part of the season will be dull.

It is certain that very little coal will be sent up the lakes at the beginning of the navigation season, Apr. 15. A few boats have cargoes that were loaded last fall, but like those holding anthracite, the contracts call for shipment at the option of the boat owner up to thirty days after the opening of navigation, and the shippers have no intention of pressing the delivery even then unless there should be a decided change.

In general, the 1915 season shows signs of opening very much the same as 1914. It was the intention of shippers to do very little until the first of July, but when the season was over it was found that the tonnages handled were really larger than the average over a period of ten years. Approximately 28 million tons of coal of all kinds went up the lakes. The growth of the demand in the Northwest has been so large that if the shipments of 1915 fall below 1914 the trade will be very much disappointed and surprised.

The Origin of Coal

Various schools of thought have battled long on the question of coal formation. Some have declared that the original vegetable matter was the main determinant of the nature of coal; others that the action of the peat bog prior to carbonization gave the character to the final product. Others again lay most stress on age, and yet others on temperature. Then there are experts who place emphasis on the pressure or the heat developed by such stress. All these theories have their value, as the clever monograph of David White, Reinhardt Thiess and Charles A. Davis of the Bureau of Mines amply proves. Certainly, White is fully justified when he upholds the importance of pressure as a direct or indirect modifier of the amount of fixed carbon in coal.

But it is a long way from White's moderate statement to the rash generalizations of Dr. Bergius, of Hannover, which we published Nov. 29, 1913. Coal is a product of all its past history. It would be a folly to regard it as a simple body rendered complex solely by different heat and pressure treatment. Different bodies under variant bi-chemical and dynamo-chemical actions, acting for longer or shorter periods of time, have given us our multifarious fuels. They do not have a simple formula, for they are not factors of any single variable.

Lake Vessels Diverted into the Coastwise Trade

Twenty-five Canadian ships of an average gross tonnage of 2200 tons will go to the Atlantic coast at the opening of navigation on the Great Lakes. Most of these vessels have been chartered by the Nova Scotia Steel & Coal Co. for use during the midsummer months and are to be returned in time for the fall grain trade on the Canadian side of the lakes.

The New England Coal & Coke Co. of Boston has purchased the steamers "Arlington" and "Brandon" of the Rutland Transit Co. fleet of Ogdensburg, N. Y. The "Arlington" is 2338 gross registered tonnage and the "Brandon" is a sister ship. They are of the type employed on the lakes in the package freight trade and will require rebuilding to be of service in the bulk freight trade.

Negotiations are pending for the steamer "John Sharpless," 1614 gross registered tonnage, and the steamer "Inland," formerly the "I. W. Nicholas," which was cut down to 245 ft. in length and 2300 gross tonnage.

The ships that will go from Canada lake service to the coast are largely vessels that were built for salt water service in European yards and later brought to the Great Lakes. They are fully equipped with salt water fittings. They will be used in international trade exclusively, as the American coastwise laws prevent foreign ships doing a coastwise business. The "Arlington" and Brandon" may be used in the coastwise business as might the "John Sharpless." The "Inland" has been changed to Canadian register and would have to be brought to the United States and registered for coastwise trade.

Brokers from Eastern cities have been on the Great Lakes for several weeks looking over ships for coast service, but very few have money to buy them. A few instances have come to light where actual purchases were possible, but most of the inquiry has been to charter for the summer season or to purchase with bonds on the property. Several years ago when there was a flurry in ocean rates a number of lake ships were taken to the coast under charters, and the lake owners lost heavily by the transactions, so that now only cash sales will take the vessels from the lakes.

There are not to exceed fifteen boats suitable for the ocean or coast business under American registry on the lakes. Ship brokers have made inquiry for a number of boats that might be sent to the coast by being cut in two and sent down in sections, but the cost of cutting in two and bulkheading the sections would be too great for possible profit. Another thing that will prevent many ships leaving the lakes is the fact they are barge-type vessels totally unsuited to ocean seas. They are built for short waves and shallow water, while on the ocean the waves would leave the ends of one of the flat-bottomed boats suspended in the air and it could not stand the strain. The small boats of 2300 gross tonnage are more of the salt water type, stronger because they are shorter, and reasonably satisfactory in deep-water service.

Boston—To help supply the unusual demand for vessels, five modern coal steamers will soon enter the Boston and coastwise trade. Three have been contracted for and two, the "Arlington" and "Brandon," are expected here early this spring, or as soon as the Great Lakes are open. These two ships have been bought by the New England Coal & Coke Co.; each has 4000 tons capacity. The other three will be operated by the G. E. Warren Co. of Boston.

Coal receipts in Boston for February were 82,603 tons of anthracite and 387,347 bituminous by water from coastwise points and 14,200 from foreign ports. Rail receipts were 11,256 of anthracite and 8690 of bituminous.

A high figure has been reached by rates between Chesapeake Bay points and Boston because of the lack of coastwise tonnage, much of which is engaged in over-ocean trade. As high as $1 a ton is being paid on coal cargoes from Chesapeake and 90c. from Philadelphia. Last year at this time the rate averaged about 60 cents.

New York—There is said to be a plan for sending vessels from the Great Lakes down the St. Lawrence River for service along the Atlantic coast during the season when many of them are unemployed on the lakes and there is a demand for more in the coasting trade. The chief obstacle to this has been the higher rates of marine insurance for this inland shipping than for those specially constructed for sailing on the ocean, but it is said that arrangements may be made with charterers and insurance companies to overcome this difficulty. It is the high freight rates which can be obtained in these times that furnish the inducement on account of comparative lack of shipping to meet the demand, especially for trade with the West Indies and the Gulf ports of Mexico and Central America, which is not strictly a domestic coasting trade. The running of coasting vessels from the Atlantic to the Pacific by way of the Panama Canal is one reason for the opening for surplus lake craft.

When the harvest time comes there is use for all the lake vessels on their regular lines and it would probably be increased if the barge canal were completed. Such as might be brought out for coasting service would have to return before the first of October, but in the spring and summer many of them might find profit along the coast even with the expense of getting there and the higher rates of insurance, although they had to accept moderate terms for their charters. So far as it may be practicable there would seem to be obvious economies in utilizing lake vessels along the coast during the season when business is slack at home and active off shore. The chief trouble is in getting them back and forth by the roundabout way of the St. Lawrence.—"Journal of Commerce."

The Layland Explosion

The rescue work following the explosion at the Layland mine of the New River & Pocahontas Consolidated Coal Co. has aroused no little comment. It has been declared that the rescue force of the Bureau of Mines took too much credit. It certainly does appear that the 47 men located apparently in working headings might have been found in less than three days of oxygen-apparatus work and one day of work without that aid. It has been pointed out that 5 of the men walked out and that the other 42 were approachable without the use of oxygen apparatus.

Jesse Thomas, the magistrate at Eccles, is quoted in a Beckley, W. Va., paper as saying that the rescuers of the Bureau of Mines gave up all hope that there were any men alive and failed to make a complete investigation, and that it was L. B. Holliday, one of the mine inspectors, who led the final rescue. Mr. Thomas declares that when warned to wait for the apparatus-men he refused and went into the mine without them. In a Charleston paper it is said that the helmetmen were not needed in the rescue and that "at no time during the entire period of search did the helmetmen, who were the government experts, take the lead in investigating or in examining any part of the mine."

Twelve of the men rescued declare in a signed statement that H. M. Bertolet, general superintendent of the N. R. & P. C. C. Co.; E. A. Henry, chief inspector of mines; R. B. Cobb, L. B. Holliday and Isaac Murray, the district mine inspectors; and G. M. Workman and Cleve Martin were among the rescuers and that L. B. Holliday and R. B. Cobb were in the lead. "In addition to the above number, there were members of the Bureau of Mines with helmet equipment, but they were not in the lead."

stranger; but to the capitalist, after he has had time to get his bearings, they appeal with less force. He wants to obtain coal at low cost to meet competition, and in the new countries specified he is getting what he is striving after.

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Thirty-three and a third per cent. of the coal shipped to upper lake ports during the navigation season of 1914 is still on the docks. There is no inquiry for early lake shipments of coal and there is not likely to be much shipping until well into May.

Iron-ore mining and transporting materially increase or decrease the demand for coal in the Northwest. So far there has not even been an inquiry for ore from the furnaces of the central states. A number of the iron-ore companies have not issued their 1915 analysis books upon which purchasers base their calculations. No prices have been made, and the outlook is far from promising for an early ore market.

It is impossible to forecast the probable volume of lake coal business for the season with the markets in such an uncertain condition. It is doubtful whether the lake coal market will be very brisk until late in June or early in July. The only prophecy that can be made with safety is that the early part of the season will be dull.

It is certain that very little coal will be sent up the lakes at the beginning of the navigation season, Apr. 15. A few boats have cargoes that were loaded last fall, but like those holding anthracite, the contracts call for shipment at the option of the boat owner up to thirty days after the opening of navigation, and the shippers have no intention of pressing the delivery even then unless there should be a decided change.

In general, the 1915 season shows signs of opening very much the same as 1914. It was the intention of shippers to do very little until the first of July, but when the season was over it was found that the tonnages handled were really larger than the average over a period of ten years. Approximately 28 million tons of coal of all kinds went up the lakes. The growth of the demand in the Northwest has been so large that if the shipments of 1915 fall below 1914 the trade will be very much disappointed and surprised.

The Origin of Coal

Various schools of thought have battled long on the question of coal formation. Some have declared that the original vegetable matter was the main determinant of the nature of coal; others that the action of the peat bog prior to carbonization gave the character to the final product. Others again lay most stress on age, and yet others on temperature. Then there are experts who place emphasis on the pressure or the heat developed by such stress. All these theories have their value, as the clever monograph of David White, Reinhardt Thiess and Charles A. Davis of the Bureau of Mines amply proves. Certainly, White is fully justified when he upholds the importance of pressure as a direct or indirect modifier of the amount of fixed carbon in coal.

But it is a long way from White's moderate statement to the rash generalizations of Dr. Bergius, of Hannover, which we published Nov. 29, 1913. Coal is a product of all its past history. It would be a folly to regard it as a simple body rendered complex solely by different heat and pressure treatment. Different bodies under variant bi-chemical and dynamo-chemical actions, acting for longer or shorter periods of time, have given us our multifarious fuels. They do not have a simple formula, for they are not factors of any single variable.

Lake Vessels Diverted into the Coastwise Trade

Twenty-five Canadian ships of an average gross tonnage of 2200 tons will go to the Atlantic coast at the opening of navigation on the Great Lakes. Most of these vessels have been chartered by the Nova Scotia Steel & Coal Co. for use during the midsummer months and are to be returned in time for the fall grain trade on the Canadian side of the lakes.

The New England Coal & Coke Co. of Boston has purchased the steamers "Arlington" and "Brandon" of the Rutland Transit Co. fleet of Ogdensburg, N. Y. The "Arlington" is 2338 gross registered tonnage and the "Brandon" is a sister ship. They are of the type employed on the lakes in the package freight trade and will require rebuilding to be of service in the bulk freight trade.

Negotiations are pending for the steamer "John Sharpless," 1614 gross registered tonnage, and the steamer "Inland," formerly the "I. W. Nicholas," which was cut down to 245 ft. in length and 2300 gross tonnage.

The ships that will go from Canada lake service to the coast are largely vessels that were built for salt water service in European yards and later brought to the Great Lakes. They are fully equipped with salt water fittings. They will be used in international trade exclusively, as the American coastwise laws prevent foreign ships doing a coastwise business. The "Arlington" and Brandon" may be used in the coastwise business as might the "John Sharpless." The "Inland" has been changed to Canadian register and would have to be brought to the United States and registered for coastwise trade.

Brokers from Eastern cities have been on the Great Lakes for several weeks looking over ships for coast service, but very few have money to buy them. A few instances have come to light where actual purchases were possible, but most of the inquiry has been to charter for the summer season or to purchase with bonds on the property. Several years ago when there was a flurry in ocean rates a number of lake ships were taken to the coast under charters, and the lake owners lost heavily by the transactions, so that now only cash sales will take the vessels from the lakes.

There are not to exceed fifteen boats suitable for the ocean or coast business under American registry on the lakes. Ship brokers have made inquiry for a number of boats that might be sent to the coast by being cut in two and sent down in sections, but the cost of cutting in two and bulkheading the sections would be too great for possible profit. Another thing that will prevent many ships leaving the lakes is the fact they are barge-type vessels totally unsuited to ocean seas. They are built for short waves and shallow water, while on the ocean the waves would leave the ends of one of the flat-bottomed boats suspended in the air and it could not stand the strain. The small boats of 2300 gross tonnage are more of the salt water type, stronger because they are shorter, and reasonably satisfactory in deep-water service.

Boston—To help supply the unusual demand for vessels, five modern coal steamers will soon enter the Boston and coastwise trade. Three have been contracted for and two, the "Arlington" and "Brandon," are expected here early this spring, or as soon as the Great Lakes are open. These two ships have been bought by the New England Coal & Coke Co.; each has 4000 tons capacity. The other three will be operated by the G. E. Warren Co. of Boston.

Coal receipts in Boston for February were 82,603 tons of anthracite and 387,347 bituminous by water from coastwise points and 14,200 from foreign ports. Rail receipts were 11,256 of anthracite and 8690 of bituminous.

A high figure has been reached by rates between Chesapeake Bay points and Boston because of the lack of coastwise tonnage, much of which is engaged in over-ocean trade. As high as $1 a ton is being paid on coal cargoes from Chesapeake and 90c. from Philadelphia. Last year at this time the rate averaged about 60 cents.

New York—There is said to be a plan for sending vessels from the Great Lakes down the St. Lawrence River for service along the Atlantic coast during the season when many of them are unemployed on the lakes and there is a demand for more in the coasting trade. The chief obstacle to this has been the higher rates of marine insurance for this inland shipping than for those specially constructed for sailing on the ocean, but it is said that arrangements may be made with charterers and insurance companies to overcome this difficulty. It is the high freight rates which can be obtained in these times that furnish the inducement on account of comparative lack of shipping to meet the demand, especially for trade with the West Indies and the Gulf ports of Mexico and Central America, which is not strictly a domestic coasting trade. The running of coasting vessels from the Atlantic to the Pacific by way of the Panama Canal is one reason for the opening for surplus lake craft.

When the harvest time comes there is use for all the lake vessels on their regular lines and it would probably be increased if the barge canal were completed. Such as might be brought out for coasting service would have to return before the first of October, but in the spring and summer many of them might find profit along the coast even with the expense of getting there and the higher rates of insurance, although they had to accept moderate terms for their charters. So far as it may be practicable there would seem to be obvious economies in utilizing lake vessels along the coast during the season when business is slack at home and active off shore. The chief trouble is in getting them back and forth by the roundabout way of the St. Lawrence.—"Journal of Commerce."

The Layland Explosion

The rescue work following the explosion at the Layland mine of the New River & Pocahontas Consolidated Coal Co. has aroused no little comment. It has been declared that the rescue force of the Bureau of Mines took too much credit. It certainly does appear that the 47 men located apparently in working headings might have been found in less than three days of oxygen-apparatus work and one day of work without that aid. It has been pointed out that 5 of the men walked out and that the other 42 were approachable without the use of oxygen apparatus.

Jesse Thomas, the magistrate at Eccles, is quoted in a Beckley, W. Va., paper as saying that the rescuers of the Bureau of Mines gave up all hope that there were any men alive and failed to make a complete investigation, and that it was L. B. Holliday, one of the mine inspectors, who led the final rescue. Mr. Thomas declares that when warned to wait for the apparatus-men he refused and went into the mine without them. In a Charleston paper it is said that the helmetmen were not needed in the rescue and that "at no time during the entire period of search did the helmetmen, who were the government experts, take the lead in investigating or in examining any part of the mine."

Twelve of the men rescued declare in a signed statement that H. M. Bertolet, general superintendent of the N. R. & P. C. C. Co.; E. A. Henry, chief inspector of mines; R. B. Cobb, L. B. Holliday and Isaac Murray, the district mine inspectors; and G. M. Workman and Cleve Martin were among the rescuers and that L. B. Holliday and R. B. Cobb were in the lead. "In addition to the above number, there were members of the Bureau of Mines with helmet equipment, but they were not in the lead."

Discussion By Readers

Recognition of Bravery

Letter No. 6—In discussing the question of the suitable recognition of self-sacrificing acts of miners who have performed deeds of heroism, it is well to consider *first*: Who are to be included in this class of "miners," if it be permitted to use that term in its broadest and most significant application; and *second*: What acts of heroism should be regarded as being worthy of special recognition?

The members of the great fraternity of mine workers comprise not only the coal digger, the greater part of whose life is spent in the dark chambers of the mine; but the official force of a corporation, both clerical and executive; the state or federal officials, whose duty it is to enforce the law for the safeguarding of life and property and to assist in and direct the work of rescue in cases of disaster. Besides these, however, there is a great army of defenseless and dependent ones—wives and children, who form as great and as important a part of the industrial structure of mining as does the miner or the official himself. Frankly it must be admitted that, in the recognition of acts of heroism, these should receive as great if not greater consideration than those who risk life and limb in deeds of valor.

The world has always been ready to receive and applaud the man or woman who has risked life in an attempt to save the life of another, which is but just and right, since such acts are generally prompted by motives of love or humanity—qualities of which the world stands greatly in need. Public approbation and reward, however, add nothing to the moral satisfaction that is the natural result of a noble deed. As the poet sings:

> "I hold this thing to be grandly true,
> That a noble deed is a step toward God;
> Lifting the soul from the common sod
> To a broader field and a grander view."

But public recognition greatly strengthens those ties of humanity by which we are seeking to establish the recognition of the *"brotherhood of man."*

I would advocate that wherever or whenever a life is risked in the endeavor to save life such act should be considered worthy of recognition. Whether the attempt results in success or failure, the act is none the less heroic and proof of the higher attributes of humanity. The deed should be recognized, not the result.

If the would-be rescuer survives his act I know of no better way of recognizing his valor than by bestowing on him a tangible insignia of honor. It may be of small intrinsic value, but it will be prized more highly and afford a more lasting pleasure than any pecuniary gift because of the sentiment it conveys. It will always be a reminder of what he has been and should continue to be, thus serving as a mentor for his moral life.

On the other hand, if the rescuer forfeits his life or is disabled and incapacitated for future usefulness I would say that, in addition to the above reward, he or his family should receive a monetary compensation that will materially assist them in meeting the exigencies of life and fulfilling its requirements without incurring the humiliation of becoming the objects of charity. It must be remembered that the act of heroism performed in this case by the worker, who gives his own life in the attempt to save his fellow, has a counterpart in the daily struggle that too often must follow in the home bereft of its bread winner and guardian. The brave wife must become both provider and home-keeper, which requires the highest type of moral courage and is most worthy of the highest encomiums of praise and recognition.

The attempted rescue may be the impulsive promptings of an exciting moment in which judgment is suppressed; but that which requires years of heart-breaking toil, daily selfsacrifice, a constant fight with despair, a continual compliance with the stern demands of duty, lightened only by the glow of the fire of a divine love, may end, perhaps, in a desolate and impoverished old age or a pauper's grave. Who can estimate the value of such devoted toil and care? Were I to be rewarded for performing the grandest act of heroism by the bestowal of the most magnificent insignia, I would award the honor to my wife as her incontestible right, for hers would have been the most heroic act had mine proven disastrous.

I. C. PARFITT,
Assistant Foreman.

Jerome, Penn.

Letter No. 7—I heartily indorse the suggestion of the writer of Letter No. 3, COAL AGE, Mar. 13, p. 471, that a fund be started, the proceeds of which shall be devoted to providing some suitable recognition of bravery on the part of mine workers. I think that the suggestion made as to the name and administration of such fund is good. No doubt some difficulties would arise and injustice be done at times through favoritism.

Few callings offer more opportunities for the display of bravery than coal mining. Let word reach the miner at work at the face that some one has been hurt and he drops his tools at once. He thinks of neither the loss of time, which is money to him, nor the danger to which he may be exposed. His one thought is for the rescue of his fellow worker.

Everyone familiar with mining knows that there are two classes of mine workers. There is the man who tries to obey the law and the regulations of the mine. He considers the safety of others as well as his own; and *he* is the man of whom most may be expected in time of danger. He is the first to offer his help—not that he expects any reward, but his desire is to rescue another and his own danger is secondary in his mind.

There is another class of worker who has no respect for the law or the regulations of the mine. He is a reckless fellow, thoughtless of his own danger and that of others. In time of trouble, he is often to be found the center of a group, telling how the accident could have been avoided and blaming the company for what was probably the reckless act of another of his own kind.

It is men of this type that make coal mining dangerous, and their presence in the mine is more to be feared than natural causes. To work in company with these men is one of the greatest dangers to which the miner is exposed. His experience and care afford him no protection further than concerns his own act. It requires a truly brave man to face such conditions daily.

In regard to the form to be adopted for the recognition of bravery, it does not seem to me that this matter should be regarded from the *financial* standpoint as has been suggested. In most of the coal-mining states there is a workmen's compensation law in force which amply provides for this exigency. I feel that the man's act deserves a more dignified recognition than a pecuniary reward, which would seem to offer to pay him for his service so generously given. I believe that a suitably inscribed medal would be more appreciated and highly treasured than the payment of money, however much this might be needed. I would say there should be, however, a restriction that would not permit anyone save the miner's wife to wear the medal.

In turning this question over in my mind, it occurred to me that it may happen that the same person would win a second medal, on another occasion. I would suggest that it might be well, in such a case, to make the second medal of a higher degree that would be more valued than the first.

In regard to the question of who would be rightful competitors for such recognition and award, it may seem hard to draw the line between the different classes of men who are commonly engaged in rescue work in case of accident in a mine. There are the mine inspectors who are paid by the state and who are expected to take the lead at such times. They are, without exception, brave men who go right ahead and do their duty in the face of great danger. Again, there are the U. S. Bureau of Mines employees—another set of brave fellows, who are paid by the Federal government and who likewise risk their lives to save others in time of danger.

The question arises, Should the recognition of bravery be extended to these men who are performing the duties for which they are paid and which is the recognized part of their service to the government; or is the proposed recognition to apply only to the man who has left his working place and generously given his service without thought of pay or reward, knowing that he is not compelled to do this except by the claims of humanity? This is an important question that should be decided.

JOHN H. DYE,
Mining Engineer.

Willard, Ky.

Confederation of Mining Societies

Letter No. 1—I was much impressed and interested in the suggestion made in COAL AGE, Feb. 27, p. 381, in regard to the amalgamation of the very large number of mining societies now organized in this country. I want to indorse this suggestion and recommend further that the same plan be extended to include all geological societies, in the same federation.

The difficulties that would naturally present themselves in such a federation, owing to differences in the professional or financial standing of the societies and various regulations in respect to membership, I believe could be easily and successfully adjusted. The value of such a federation to the individual member would be great, as it would do away with the present necessity incumbent on many of maintaining membership in a number of different institutes and societies. As has been stated no friction or competition should exist between these organizations, whose common aim and purpose should be the increase of knowledge and the betterment of conditions in every department of mining.

The British Institution of Mining Engineers furnishes an example of such a federation of societies having kindred aims and purposes. That institution combines in one organization about eight mining and geological societies in Great Britain. It was formerly known as the Federated Institute. The rules and bylaws of the organization are drawn in such a manner as to allow each society to hold its usual district meetings and carry out its own program as before. In addition to this, the federation holds about three meetings a year in different important mining and industrial centers—one, however, being held in London where the headquarters of the association is located. All the papers and discussions of the several societies together with the transactions of the institute are edited, indexed and bound in a single volume, which is supplied free to all members, except a nominal charge for binding when that is desired. The papers are issued to the members bimonthly, however, in the order in which they are prepared.

The general result of this confederation of societies has been a gratifying success. When the plan was first promulgated several of the societies were averse to its adoption; but these organizations have since been amalgamated with the result that the membership of the Institution of Mining Engineers now includes most of the prominent mining engineers in all parts of the world. Probably the chief advantage of such a federation is that its members are promptly supplied with the most uptodate information in respect to every branch of mining activity. Many excursion meetings have been arranged, from time to time, and these have been extended to different parts of Europe, Canada and the United States. These meetings have proved a source of great interest, combining as they do instruction and recreation.

Not least among the activities of the federation has been the part that it has played in furthering safety in mining, by conducting through its committees elaborate experiments and investigations relating to coal-dust dangers, safety explosives, rescue apparatus and refuge stations. The work done in this direction has been a large factor in stimulating the later work performed by the government, who have gladly adopted the suggestions of the institute committees and used their appliances as a basis for its investigations.

In my opinion, there is no reason why there should not be a similar confederation of mining organizations and institutes in this country. I believe it would be even more successful than the one to which I have referred. The plan would certainly result in a large increase in the membership in all societies of that nature and would open up a much greater sphere of usefulness and influence than can possibly be gained by the individual societies now in existence.

WESVANIA.

Kimball, W. Va.

The British Explosions in Mines Report and the Verner Theory

Letter No. 15—The recent discussion of the Verner counter-current theory in COAL AGE apparently left the matter wholly undecided in respect to the practical value of the theory, in the study of mine-explosion phenomena. Inasmuch as the experiments made at the Eskmeals experimental station by Doctor Wheeler, for Samuel Dean, in the hope of throwing light on this theory, resulted in an apparent confirmation of some of the arguments brought out during the discussion, it is remarkable that no mention of any such phenomena is to be found in the fiscal report of the British Explosions in Mines Committee, which has been issued since the experiments were made at their experimental station.

Although Doctor Wheeler, who was temporarily in charge of the station, is said to have told Mr. Dean that he had expected the results obtained in the experiments and that these were no surprise to him, since no comment is made in their report it is safe to assume that none of the committee thought there was anything demonstrated that affected the initiation or the progress of a coal-dust explosion in a mine.

This committee, consisting of Sir Henry Cunnynghame, K. C. B., assistant under secretary of state for the Home Department, and chairman of the Royal Commission on Mines; R. A. S. Redmayne, H. M. chief inspector of mines; Capt. Desborough, one of H. M. inspectors of explosives, who was also a member of the International Committee that visited and reported on mining in the United States of America just previous to the Marianna explosion; Prof. Harold B. Dixon, professor of chemistry at the Manchester University, who is known the world over as an authority on the rate of explosion in gases; and Maj. William C. Blackett, consulting mining engineer, well known as an investigator of coal-dust phenomena, were appointed by the home secretary to have the control and direction of the experimental inquiry into the causes and means of prevention of coal dust explosions in mines, to be undertaken on behalf of the Home Office.

In addition to this committee the home secretary appointed Mr. Delavigne, C. B., a member of the executive committee; and, in addition, the following as a consulting committee: The Right Honorable W. Abraham, M. P.; Sir Lindsay Wood, Bart., F. L. Davis, Enoch Edwards, M. P., Sir Thomas R. Ellis, J. S. Haldane, M. D., F. R. S., Robert Smillie, Sir William F. Garforth, Charles Pilkington, J. T. Forgie and William W. Hood.

It will be observed that this was a very strong committee, whose labors extended from May 3, 1911, to Sept. 23, 1914. The final report was only signed by Messrs. Cunnyghame, Delavigne, Redmayne and Desborough; Messrs. Dixon and Blackett being absent on other important duties. The summing up of the committee occupies thirteen pages of pamphlet size. The report opens by repeating the statement, made in the Fifth Report, that a mixture by weight of equal proportions of coal and incombustible dust cannot be ignited by a charge of 24 oz. of blasting powder fired from a stemmed cannon, in the large gallery, if the atmosphere contains no combustible gas. It remained to be seen, however, what proportion of combustible gas present in the air would render such a mixture ignitable. Several large-scale experiments had been made with coal gas; but, as this gas varies so much from methane under like conditions, the committee procured a large quantity of nearly pure methane from the Cymmer Colliery in South Wales.

The following analyses of these two gases is particularly interesting and easily accounts for the milder behavior of the methane mixture. The experiments were made both in the large gallery, 7½ ft. in diameter, and in the smaller one, 3 ft. in diameter.

	Coal Gas, Per Cent.	Cymmer Firedamp, Per Cent.
Carbon dioxide	0.10	0.90
Ethylene	3.75	0.20
Carbon monoxide	5.95	0.20
Hydrogen	52.75	.....
Methane	30.65	96.40
Ethane	3.40	.....
Nitrogen, by difference	3.40	2.30
	100.00	100.00

The mixture of gas and air was effected in the gallery, by passing both together through the fan and forcing them into the gallery toward the open end, for five or 10 min. Immediately before firing the cannon, the communication with the fan was cut off, and the cannon was then fired into a "still" atmosphere in a gallery closed at one end. The cannon was placed 50 ft. from the closed end and pointed into a tube 3 ft. in diameter and 10 ft. long, open at both ends and strewn inside with 30 lb. of a mixture of coal dust and incombustible dust, in the proportion of 1 : 1. This one to one mixture was also strewn along the gallery for 150 ft., at which point a plate was removed from the side of the gallery. In the case of the 3-ft. gallery, the end nearest the cannon was closed by an iron plate and the other end by a diaphragm of oiled paper. The oiled paper was at a distance of 350 ft. from the cannon. Fuller's earth was the incombustible dust used. The dust mixture was equal to one ounce per cubic foot of air.

It was found necessary under these conditions to have 4.6 per cent. of methane before the 1 to 1 mixture became ignitable. The 4.5 per cent. of methane only extended the flame from the cannon a distance of 40 feet.

It may here be remarked that in experiments I made many years ago, I found that a mixture of coal dust with air containing 4.5 per cent. of gas having a velocity of 370 ft. per min. would pass the flame through a Davy safety lamp in 10 sec., showing that the influence of the incombustible dust is very marked. The committee concluded from their experiments, however, that 5.6 per cent. of methane mixed with air formed the lower explosive mixture of dust and free air. Judging from experiments made on safety lamps in air containing coal dust and 4½ per cent. of firedamp, it has been proved that, if from any cause there is a preponderance of pure coal dust present in the air, an explosion will certainly result. The quantity of coal dust in the 1 : 1 mixture was 0.05 oz. per cu.ft. of air.

That portion of the report in regard to the watering of coal dust will interest many mining men, perhaps, more than any other part of the investigation. The coal dust used was bituminous, containing about 35 per cent. of volatile matter and about 5 per cent. of ash. The conclusion was that a coal dust containing 15 per cent. of ash required 25 to 30 per cent. of water to render it unignitable, and that every additional 10 per cent. of ash might reduce the water content by 5 per cent.

The mode of dampening the air and dust recommended by the committee was by the use of atomizers. They

found that if 5 lb. of coal dust was put into the short tube into which the cannon was pointed and the rest of the gallery dampened as above, the flame was only extended to 100 ft. The conclusion was that if dry coal dust is dampened by an equal weight of water in the form of a fine mist, flame will not extend beyond a limited distance. The application of incomb tible dust is at present an unsolved problem, without a great excess of such dust is used. Again, if the application of 30 per cent. of water is effective, then, in some mines its use would be preferable to incombustible dust; but, in deep and hot mines, water would seriously affect the health of the miners.

In my opinion, the British committee did not make their tests under practical mining conditions. The plan adopted differed from the Altofts arrangements where a current of air was in circulation, whereas in the Eskmeals gallery, described in the Sixth Report, the galleries were closed at one end. Hence, again, it is remarkable that there were no effects noted similar to those demonstrated in the experiments made for Mr. Dean. All of these experiments entirely leave out of consideration the very fine dust, which is continually floating in the air of a mine while the coal cars are in transit. In my opinion, they have omitted the most dangerous element, particularly where there is any percentage of firedamp in the air.

In closing permit me to say that I believe that all experiments made in a gallery closed at one end are misleading, as demonstrated in the experiments made for Mr. Dean. An explosion of coal dust or of a mixture of coal dust with firedamp may have been arrested by the joint action of incombustible dust and the reverse current.

Again, the committee appear to have concluded that a "pioneering" cloud of dust *must* precede the flame of an explosion. Doubtless the experiments made in a gallery only open at one end might seem to support this contention, but other experiments have been made where the only coal dust present was already floating in the air and, therefore, no pioneering cloud of dust was or could be present in the explosion that resulted. This has been proven many times in my own experiments on safety lamps, in the presence of an atmosphere containing only 4½ per cent. of gas. A normal content of coal dust, such that a low-velocity air current, say 6 ft. per sec., would lick up and carry along, is ignitable by a safety-lamp flame and is, also, so explosive that it will carry the flame through the gauze of a Davy lamp and ignite and explode the outer atmosphere. This is distinctly a more dangerous condition than the committee's report would seem to indicate.

JAMES ASHWORTH,
Mining Engineer.

Vancouver, B. C., Canada.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

Detection of Carbon Monoxide in Mines—There is no reliable **flame test** for the detection of carbon monoxide as it occurs in mines. The lamp flame is, no doubt, lengthened when fed with air containing the gas, but this effect is imperceptible in a percentage that would be **fatal to life.**

The **lengthening of the flame** is plainly noticeable when the fine dust of an inflammable coal is suspended in considerable quantity in the still air of a mine entry or chamber. This is the result of the increased combustion owing to the dust-laden air feeding the flame. It is possible that a barely perceptible cap may be discerned at times under particularly favorable conditions. This, however, would be a **dust cap** and would not indicate the presence of gas.

What is known as the **"blood test"** will reveal the presence of very small percentages (0.01 per cent., Haldane*) in the air. The delicacy of this test, however, is greatly impaired by the difficulty of correctly judging of the change in the color of the blood solution employed in making the test. The difficulty is increased by the dim, artificial light of the mine and the impaired eyesight and possible partial color-blindness of the observer. The blood test also requires time and care in its making, which together with the necessary apparatus do not recommend its use in the mine.

The **experiments** of Dr. J. S. Haldane† to ascertain the extent to which animal life is affected by the presence of carbon monoxide in the atmosphere breathed into the lungs led him, first, to suggest the use of small animals as a plainly visible and thoroughly reliable index of the presence of gas in quantity dangerous to human life. Dr. Haldane observed that **mice and small birds,** preferably canaries, were prostrated by the gas in a much briefer period than is required to produce the same effect on a man.

Exposed to an atmosphere containing 0.1 per cent. of carbon monoxide, a mouse became giddy in 12 min., while a man experienced a like effect only after breathing the same atmosphere for a period of two hours. Again, three small mice and a canary were exposed to an atmosphere containing 0.6 per cent. of this gas. In 4 min. the canary fell from its perch and died, and the mice became helpless, but recovered quickly in fresh air. A man continued to breathe the same atmospehre and, at the expiration of 10 min., was unaffected, a test of his blood showing but one-fourth saturation.

Dr. Haldane's **conclusions,** based on his experiments, are briefly as follows:

1. Noticeable symptoms are never produced by less than about 0.02 per cent. of carbon monoxide in otherwise pure air.

2. The poisonous effect is decreased somewhat by a moderate addition of carbon dioxide; but increased by depletion of the oxygen of the air.

3. Small animals recover quickly and do not exhibit the after effects of the poisoning so often fatal to man.

4. The analyses of the blood of victims of the afterdamp of mine explosions usually show 80 per cent. saturation.

*Trans. I. M. E., Vol. 38, p. 275. †Do., pp. 267-280.

The Coal Age Pocket Book

A series of **experiments** made at the Pittsburgh testing station to determine the effect of **repeated exposure** of mice and canaries corroborate the conclusion of Dr. Haldane in respect to the complete rapid recovery of these small animals from the effects of carbon-monoxide poisoning.

As previously explained, men who have been once overcome by this gas are more sensitive to its effects again. This is not the case, however, with mice and birds, which fact makes them the more useful in mining practice. A bird or a mouse that has been exposed to the gas and overcome a great number of times shows no more sensitiveness to its poisonous effects than one never poisoned by the gas.

Following is the record of eight exposures of a canary to an atmosphere containing 0.25 per cent. carbon monoxide, as given on p. 8, Technical Paper 62, of the U. S. Bureau of Mines, each exposure, except the last, being made immediately upon the recovery of the bird from the previous one. The table shows the time, in minutes intervening between the moment of exposure, first signs of distress, collapse of the bird and recovery in fresh air.

TABLE 1. EFFECT OF REPEATED EXPOSURE ON CANARY

No. of Exposure	Time in Minutes		
	Distress	Collapse	Recovery
1	3	1	7
2	3	1	8
3	1	3	8
4	2	3	7
5	2	2	7
6	2	2	7
7	2	1	12
	(a 2-min. interval)		
8	1	1	8

The above record shows earlier signs of distress after the first two exposures. This may naturally be attributed to the alarm and expectancy of the bird arising from its previous experience; but the total interval to collapse was uniform (4 min.), except in the fourth and the two last exposures, which were 5, 3 and 2 min., respectively.

The following table shows the same data recorded in four successive exposures of a mouse to a 0.3-per-cent. mixture of carbon monoxide and pure air:

TABLE 2. EFFECT OF REPEATED EXPOSURE ON MOUSE

No. of Exposure	Time in Minutes		
	Distress	Collapse	Recovery
1	3	6	17
2	3	10	23
3	4	12	34
4	3	14	not given

A similar series of experiments, performed by exposing a canary at irregular intervals and on different days to atmospheres containing from 0.18 to 0.24 per cent. of carbon monoxide and numbering 14 exposures in all, extending over a period of nine days, showed practically the same results.

Inquiries of General Interest

Legal and Commercial Questions in Coal Mining

Kindly answer, through the columns of COAL AGE, the following questions:

(a) If I contract for a piece of coal land with a minimum tonnage for five years and work the coal all out before the lease expires, is the obligation imposed by the lease longer binding? (b) What is the standard analysis of steam bituminous mine-run coal for this section (Clearfield County) of Pennsylvania? (c) How should a bid for a coal contract be made out? In general, does the bidder have to give security? (d) What would be a fair average contract price for this coal for shipment to New York and the New England States during the coming year? (e) Can you give me the names of companies that will furnish bonds to the amount of several thousand dollars as security for the prompt payment of royalties and proper fulfillment of other lease obligations? What is necessary to secure such a bond?

C. EVANS.

Osceola Mills, Penn.

(a) Removal of all merchantable and minable coal terminates further obligations of both parties, unless there is some specific provision to the contrary in the lease, as where there is a guaranty of the quantity of coal underlying land. But, of course, the terms of the lease remain binding as to all matters that are unsettled when the last coal is removed.

(b) The analyses of a large number of the coals of Clearfield County, Penn., are given in Bulletin 85 of the Federal Bureau of Mines, pp. 85-90. These analyses show the following variations: Moisture, 1.6-4.19; volatile matter, 17.3-22.5; fixed carbon, 66.12-71.07; ash, 6.2-12.4; sulphur, 0.75-3.50. It may be said that the Clearfield County coals are, in general, low in ash. An interesting paper entitled "Coal in the First Bituminous Basin in Center and Clearfield Counties, Penn.," by R. N. Hosler, mining engineer of the Morrisdale Coal Co., is to be found in the Proceedings of the Coal Mining Institute of America, for 1909, pp. 278-299.

(c) A bid is usually dated and addressed in form like a letter and reads: "I offer to, etc.," stating clearly and fully the terms of the offer. But since the acceptance of a written bid constitutes a formal contract, the bid on an important transaction should be drawn by one experienced in that particular line, so as to embody all important points and avoid trouble arising from conditions that would render the contract invalid. It is a common practice to require security to comply with the terms of a bid on its acceptance.

(d) Without knowing more specifically the character of the coal to be mined, the method of preparation of the same for market, and other data that regulate and control its market value, it may be stated that a fair contract price for the coming year would be from $1.15 to $1.30 per ton, f.o.b. The actual price will be determined by the quality of the coal and the care taken in its preparation for market.

(e) The following are the names and addresses of a few casualty and surety companies in New York, who do a bonding business: The American Surety Co. of New York, 100 Broadway; Fidelity & Casualty Co., 92 Liberty St.; National Surety Co., 115 Broadway; Maryland Casualty Co., 100 William St.

In order to secure a bond, it is necessary to furnish the indorsement required by the bonding company or to put up satisfactory collateral of a value determined by the amount of the bond. The indorsement of four or five responsible parties accepted by the bonding concern is often sufficient.

The Mine Foreman's Inspection

Kindly explain what is the object of the law requiring the mine foreman to visit the working places every alternate day when the men are at work.

MINE FOREMAN.

Mt. Carmel, Penn.

The purpose of this requirement is not only that the mine foreman shall be fully acquainted with the conditions of every working place in the mine, but that he shall have a personal knowledge of and acquaintance with the men working in those places and observe the manner in which they perform their work and give them any needed instructions in regard to the safe and economical mining of the coal and otherwise provide for their safety. Without this provision in the law, the mine foreman would make irregular visits, giving his chief attention to those places he considered to be the more dangerous; and, as a result, other working places would not be visited regularly and any possible dangers existing in such places would escape his notice.

Besides observing the manner in which the miner performs his work, the foreman should give particular attention to the condition of the roof at the coal face, observing if gas is present or timbering needed to make the roof and coal secure. He should also observe what supplies of props, cap-pieces, rails, etc., are on hand, which may or may not be needed. This is necessary in order to prevent undue waste of material. The foreman should also note any evidence that his assistants or firebosses have been negligent in their examination of the working places. He must note, particularly, that each working place is properly ventilated, giving instructions in regard to any needed brattices to cause the air to sweep the working faces. If safety lamps are required, he should note carefully their condition and use, and observe any possible violation of the rules in regard to open lights, lamps or matches. The instructions of the mine foreman should cover the proper mining of the coal, timbering of the coal and roof at the face, the use of safety lamps and explosives, the location, charging and firing of holes and the observance of the mining laws, rules and regulations.

Examination Questions

Alabama First-Class Mine Foremen's Examination, Held Jan. 25-28, 1915

(*Selected Questions*)

Ques.—What is the rubbing surface of an airway 4 ft. high, 9 ft. wide and 1000 ft. long?

Ans.—The perimeter of this airway is $2(4+9)=26$ ft., and the rubbing surface $1000\times26 = 26{,}000$ sq.ft.

Ques.—What dangers are met in approaching old abandoned workings; and what precautions should be taken to avoid these dangers?

Ans.—Old and abandoned workings may be and frequently are poorly ventilated. As a result, there is danger that gas has accumulated in such places. In approaching the abandoned workings of another mine, there is, besides, danger that water has accumulated in sufficient quantity to flood the new workings.

In all such cases, drillholes should be kept in advance of the entries or rooms driven toward such workings. Such drillholes should not be less than 5 yd. in length and as much greater as the conditions in the strata and the depth of the water that has accumulated may require. One drillhole should be kept in the face of the heading and flank holes should be drilled in each rib at an angle with the same.

Where any uncertainty exists in respect to the location of the old workings the headings should be driven single, in order to insure greater safety. Only safety lamps should be allowed in these headings and wooden plugs should be kept in readiness for use to stop the holes in case a body of water is tapped. A close watch should be kept for the first appearance of water or gas in the seam.

Ques.—What method of ventilation lessens the danger of an explosion and at the same time reduces friction?

Ans.—By splitting the air current and dividing the mine into separate ventilation districts, the ventilation in each district is under better control. There is, also, less danger of an explosion of gas or dust, since the gases and dust produced in one section are not carried into another section but pass directly out of the mine by the main-return airway. By splitting the air current in this manner, its velocity is reduced, which greatly reduces the friction.

Ques.—What are the dangers attending the presence of an excessive amount of fine coal dust in a mine; and what remedies should be used to lessen the danger of its presence?

Ans.—When fine coal dust is allowed to accumulate in the mine entries and workings it is blown into the air by the concussion due to blasting and to the opening and closing of the mine doors, besides being raised by the various operations performed in the mine, particularly the haulage of coal and the traveling of men and animals through the passageways. The fine dust suspended in the air current not only increases the explosive condition of the air when a small percentage of gas is present; but, in the event of a blownout shot or other similar occurrence, the suspended dust may become ignited and cause an explosion when no gas is present.

In order to lessen this danger, the mine entries and the working faces should be kept free from the accumulation of dust as far as practicable. All roadways and passageways should be cleaned regularly, and the fine coal and dust should be loaded out of the working places. In very dusty mines, a spraying system should be installed capable of maintaining the necessary humidity of the mine air and thus prevent the drying out of the mine by the absorption of moisture from the dust. In addition to these precautions, a constant and thorough inspection of the workings should be maintained and strict regulations should be enforced in respect to the use of open lights, in mines where gas is generated in any quantity.

Ques.—What is termed a "dead hole," and what is a "windy shot?" Explain fully.

Ans.—A dead hole is one whose line of least resistance corresponds to the axis of the hole. In a dead hole, the charge of powder has no opportunity to perform the work intended; and, as a consequence, the shot is liable to blow its tamping. When this does not occur, a "windy shot" will probably be the result.

A windy shot is one in which a portion of the charge of powder expends its force on the mine air instead of performing the work of breaking down the coal. This occurs when the charge of powder is too great for the work to be performed.

Ques.—An anemometer makes 120 r.p.m. in an airway 8 ft. high and 10 ft. wide; what is the quantity of air passing per minute?

Ans.—The sectional area of this airway is $8 \times 10 = 80$ sq.ft. The anemometer is calibrated so that each revolution of its vanes corresponds to 1 lineal ft. of air travel. Without making any allowance for the inertia of the instrument, which in ordinary mining practice is an unnecessary refinement, the given reading of the instrument indicates a velocity of the air current of 120 ft. per min. Now, assuming that this is an average reading for the entire cross-section of the airway, the quantity of air passing is $120 \times 80 = 9600$ cu.ft. per min.

Ques.—If you had charge of a mine, and the fan engine suddenly broke down, what would you expect to be the condition of the ventilation in the mine, and how would you continue to run the mine the rest of the day?

Ans.—The stoppage of the ventilating fan would, in most cases, cause an entire cessation of the circulation of air throughout the mine. In a few cases, a natural air column formed in the shaft or in the rise workings in the mine may succeed in maintaining a small circulation of air. However, no dependence should be placed on this natural ventilation and word should be promptly sent into the mine and the men withdrawn from the workings at once. The men should not be permitted to again enter the mine until the latter has been thoroughly examined by competent firebosses and reported safe.

Coal and Coke News

Harrisburg, Penn.

Shall a corporation have privileges and powers that are denied an individual in Pennsylvania? That is the question which is worrying many coal and coke operators, and which is involved in the bill offered in the Senate by Senator W. E. Crow. It provides for the appointment of receiverships for individuals as well as for corporations, and is meant to cover a point, regarded by some as hazy and indefinite.

In substance, Senator Crow's bill provides for the authorization of receiverships for individuals whose affairs have become complicated, but whose property or security ownership is yet regarded as ample to cover all their liabilities, if there is a deferred time limit for the meeting of matured or maturing obligations of credit. Three or four striking instances have occurred in the state within the last few years, in which individuals have petitioned for and for whom receiverships were authorized and appointed by the lower courts.

A case in point is that of the Pittsburgh-Buffalo Coal Co. and the Four States Coal Co., both of which are in the hands of receivers, as also is their organizer and president, John H. Jones, and who is, it is reported, heartily in favor of this bill.

It is thought here that Senator Crow's idea in introducing this bill is due to the severe blow dealt to coal and coke interests in Fayette County by the decision of the Supreme Court in the case of J. N. Galey against Colonel J. M. Guffey, which ruling makes it mandatory upon Common Pleas Courts to permit holders of mortgages to foreclose them. By this decision the holdings of J. V. Thompson and his associates are placed in jeopardy. These men are placed in danger of losing their resources, which are now tied up in receiverships, with injunctions restraining the creditors from touching them. According to Justice Stewart's decision, Crow's bill may not be constitutional, but there is going to be hard fight on it. For if the courts give permission to foreclose these mortgages given by Thompson and his associates, it will mean that coal lands and coke operations will drop in value; and that men who have covetously eyed J. V. Thompson's vast holdings will step in and take them for a song.

Few persons realize the gravity of the financial situation that the Guffey decision has caused, for by it many coal and coke operators in this state may be reduced to poverty.

The Coal Tax Still in Court

The coal tax on anthracite is still in the limelight, and Representative Adams has come forward with a bill, providing for the payment of the tax to school districts in townships in which roads are made and repaired by taxpayers.

Despite Governor Brumbaugh's statement of a month ago, to the effect that he opposed any move tending to disturb the present Roney anthracite tonnage tax, until such time as the courts of the state pass upon its constitutionality, there is every indication that the present Legislature will be asked to amend the Roney act so as to prevent anthracite counties from receiving a cent of the tax. Attorney General Brown is said to be drafting the proposed amendment.

An effort has been made to get the governor to discuss this latest phase of the situation, but he has asked not to be quoted at this time.

Early in February, Governor Brumbaugh said he was opposed to the Ramsey bill which would repeal the Roney act, and that the courts ought to be allowed to pass upon the validity of the law before any further action should be taken.

Following the publication recently to the effect, that the administration favored amending the law so that the state would receive the entire tax, the revenue thus raised to be used for the building and upkeep of state roads, Governor Brumbaugh said that he was against any plan that would take away from the anthracite counties their share of this revenue.

Attorney General Brown, it is known, has his doubts, as to the constitutionality of the present law. He thinks the distribution feature which calls for the state and counties dividing the revenue will not stand the test. An amendment such as he suggests, it is his belief, will make the law sound.

Attorney General Brown's bill will call for a flat tax of 5c. on every ton of anthracite taken from the mines. The present law places a tax of 2½ per cent. ad valorem.

The fact that Senator Crow offered the administration workmen's compensation bills (Nos. 494, 495, 496, 497, 498 and 499) does not mean at all that he stands for the bills as they are at present written. This situation indicates that the senator, with the manufacturers and coal operators at his back, will make a hard fight to have the bills much amended. The battle against the governor in the Senate will be merely preliminary to the main event, the speedy taking of the law before the Supreme Court for a test of its constitutionality. The unconstitutionality, it is asserted, lies in two things—the elective clause and the exemption of farm and domestic labor.

As to the elective clause, it is argued that since the bill presumes that an employer accepts the law unless he specificially rejects it, it really traps or may trap an employer into being brought within the pale of the law. It is asserted also that this amounts to a breach of the constitutional provision that property may not be taken without due process of law.

Representative Statler has introduced a bill which will require owners, lessees or operators of bituminous coal or clay mines to furnish the owners or lessees of adjoining coal or clay mines or lands with maps of the mine workings along the division line of the coal or clay mines and permitting owners of such adjoining coal lands to enter the mines and make surveys and to verify the accuracy of such maps. It also provides that upon refusal of operators of coal mines for a period of five days, after a request in writing from the adjoining coal land owner to furnish the map of the mine workings along the division line, the right to appeal to the court for such maps and surveys.

A bill making it unlawful to use any type of mining machine in retreat mining in the removal of ribs, stumps or pillars in any bituminous mine has been introduced by Mr. Dodds. It provides that any operator violating the provisions of the act shall be liable to a penalty of not exceeding $100 for each offense together with the costs of prosecution to be recovered, and a jail sentence of one day for each dollar of the fine imposed. Mine foremen, superintendents or other executive officers in charge of a mine at the time of the alleged violation shall be held responsible.

Representative Graff has asked for an appropriation of $45,000 for the use of the Topographic and Geological Survey Commission for the purpose of carrying out the provisions of the act of 1909, and for the printing and distribution of the survey.

A bill has been introduced in the Senate to amend section 3 of the Act of 1874, to read as follows: "That partition may be made under existing laws of lands and coal rights thereon and of lands and timber rights thereon whether the rights of all parties be co-extensive with the whole or not, and whether the rights of some of them extend only to the lands and part of the coal thereon, or only to an undivided interest in the land or in the coal or in the timber, and any person having an interest as herein set forth may compel partition of the entire tract of land and coal or timber, provided said coal or said timber has not been entirely severed so as to constitute separate estate."

A bill making an appropriation for refunding to the Everhart Coal Co. money erroneously paid into the state treasury has appeared in the Senate. Since the termination of the corporate existence of the Everhart Coal Co., it has through oversight continued to pay into the state treasury each year taxes on its capital stock amounting in the aggregate to $1698, although the company was not liable for any such tax to the state.

PENNSYLVANIA

Anthracite

Shenandoah—The Lehigh Valley Coal Co.'s collieries were shut down recently having worked but two days during the week. It was semi-officially announced, however, that all these collieries would resume work on full time shortly until further notice, as the company has received large orders to be filled at once. This will affect 10,000 mine workers.

Lansford—The No. 6 wash house of the Lehigh Coal & Navigation Co. was recently destroyed by fire. This entailed a loss which has been estimated at $2000.

Chauncey—The Delaware & Hudson Coal Co. has a large force of men and a steam shovel at work at No. 5 Colliery taking away a portion of the embankment, whereby another switch may be laid to the breaker. The switch will be about a mile in length and will allow the storing of loads or empty cars, as necessity requires.

Nanticoke—The following summary prepared by the secretary of the Nanticoke District Mining Institute gives the number of students enrolled and the coal companies with which they are identified: Susquehanna Coal Co., 303; Lackawanna, 207; Lehigh & Wilkes-Barre, 93; Alden Coal Co., 54; miscellaneous companies 265, or 922 students. Members of the school board and the mining district are highly elated with the progress made and the compliments showered upon them, especially the one which said "that Nanticoke has the best vocational night school in the state."

Bituminous

Indiana—The Crown Hill Mining Co. will soon be ready for active work, it being planned to have all the machinery in running order by Apr. 1. The large generator has been placed and the first shipment of mine cars has arrived and all that remains is the assembling of the other vital parts of equipment and the completing of the railroad siding.

Republic—An interesting lecture on ventilation was recently given before the class of the Republic Iron & Steel Co.'s mine, by William Seddon, mining and consulting engineer, of Brownsville. Mr. Seddon was followed by State Mine Inspector W. H. Howarth, who gave some valuable suggestions in connection with the approaching examinations for fire bosses and foremen, which will be held Apr. 6 to 9 inclusive.

Marianna—According to a recent report, the coal mine of the Pittsburgh-Buffalo Co. will be opened on or about Apr. 1. This will afford employment to several hundred men. The coal will be used in the Lake trade. The mine is the largest in Washington County, and has been closed for many months.

Pittsburgh—It is stated that negotiations looking toward a projected merger of a dozen or more independent coal concerns in the Pittsburgh district are now under way, and that the consummation of this plan is believed to be only a matter of days. The parties to the proposed combination are the Pittsburgh & Westmoreland Coal Co., the Pittsburgh & Buffalo Co., the A. M. Hanna & Co., the Youghiogheny & Ohio Coal Co., the Verner Coal Co., the Carnegie Coal Co., the Atlas Coal Co., the Henderson Coal Co. and the Pigeon Creek properties of Crawford & Theis.

Mt. Pleasant—Three plants of the defunct Sunshine Coal & Coke Co. in Fayette County, which have been idle for several months, will resume operations shortly, under a company to be known as the American-Connellsville Coal & Coke Co. The new firm is composed principally of Pittsburgh men, and is capitalized at $350,000. These plants operating on full time will employ about 1500 men.

Connellsville—The coke production and shipments of the Connellsville region are improving slowly, and are now approximately 280,000 tons per week. The chief gains in output are now being made by the merchant interests.

Uniontown—Mine Inspector J. C. Walsh recently announced that the annual examination for mine foremen and fire bosses would be held Apr. 6, 7, 8 and 9. The last day for fire bosses only. It is probable that these examinations will be held in the Armory.

New Salemville—The compressor building at the plant of the Keystone Coal & Coke Co. was recently totally destroyed by fire entailing a loss estimated at $75,000. The fire started in a generator and spread rapidly. Eight boilers were completely ruined. It is said that all the machinery in the building is a total loss. The destruction of this plant will throw 400 men out of employment indefinitely.

WEST VIRGINIA

Hinton—A coroner's jury sitting at this place brought in the verdict that the explosion at the Layland Mine of the New River & Pocahontas Consolidated Coal Co. was a dust explosion following a blownout shot. The jury did not place blame upon any individual.

Fayetteville—Three leases were recently let by the McCreery interests to the Mead-Toliver Coal Co. which is a new organization with headquarters at Mullins. These leases are all on Stone Coal Creek in the Slab Fork district, and will be developed at once.

Charleston—West Virginia coal operators are getting together for the purpose of testing the validity of the Sherman anti-trust law in its relation to the coal business, and will make an effort through the court and through both branches of Congress to establish a minimum price for their product. Such a measure it is maintained is necessary for the protection of their business and is all that will save them from bankruptcy.

The list of fatal accidents in the coal mines of West Virginia during the month of February was recently made public. This showed a total of 41 fatalities from various causes. But for the unfortunate explosion at the Carlisle mine, Fayette County, on Feb. 6, when 22 men lost their lives, the total number of fatalities in all of the sections of the state during the month was smaller than for any month during the past year. Of the men killed, 16 were Americans and 25 foreigners. A classification of causes showed that 22 men met death from explosion, 9 from falls of roof and coal, 5 from mine cars, 2 by electrocution, 1 from a locomotive, 1 from a fall, and 1 came under the head of miscellaneous.

VIRGINIA

Pocahontas—Eighteen students from the Case School of Applied Science at Cleveland, Ohio, expected to visit the Pocahontas No. 1 Mine on Mar. 26. They also intended to visit the mines at Switchback and Pocahontas and be shown through the power plant recently erected by the Norfolk & Western Ry. Co. at Blue Stone Junction.

ALABAMA

Birmingham—C. H. Nesbitt, chief state mine inspector has just made his report on the coal output in Alabama for 1914. This shows that there was a decrease of 2,386,431 tons from the figures of 1913. The total output for 1914 was 15,520,943 tons. The decrease in the tonnage of Jefferson County was 1,062,629. In the next largest coal producing county, Walker, the decrease was 597,440 tons. The three coke producing counties of the state, Jefferson, Tuscaloosa and Walker, gave a total of 3,092,780, a decrease of 538,735 tons from 1913.

KENTUCKY

Lexington—Taking of depositions in the case of the Goodrich-Lockhart Co., of New York, against Oscar A. Sears, of Lexington, and Walter S. Harkins and Joseph D. Harkins, of Prestonburg, Ky., has been completed as far as local witnesses are concerned. The suit involves recovery of a cash payment of $100,000 and return of a note for $78,000, given for the purchase of 55,000 acres of coal land in Perry County. The plaintiffs allege that they employed the law firm of Harkins & Harkins to examine the title to the property and when it reported the title good the money was paid and the note given. Subsequently the plaintiffs allege title to the land proved worthless. The case will be called before Judge L. D. Lewis at the May term of the Perry Circuit Court.

Central City—At the instance of coal and business interests in this section Representative R. Y. Thomas, Jr., representing this Kentucky district in Congress, has called upon the Bureau of Mines at Washington to urge that a mine experiment station be located at Central City when selection of points for the new stations are made. Mr. Thomas has been assured that the bureau would establish a station in Kentucky and that the request from Central City would be given due consideration.

Jackson—H. F. Davis & Co., of Winchester, has filed suit for $40,840 against the Wolf Valley Coal Co., asking for a receiver and sale of all the property of the defendant to satisfy the asserted claim of the plaintiff. The defendant has been operating at Wolf Cave in this (Breathitt) county for the past year. It is a Delaware corporation owned by Chicago interests.

OHIO

Columbus—The sales department of the Sunday Creek Co., of Columbus, Ohio, announces that the old circular sizes will be discontinued and a new schedule will be inaugurated. The domestic size in the future will be 6-in. lump. A size to be known as steam lump will be over a 2-in. screen. Nut, pea and slack will be made by using a 1-in. screen as compared with a ¾-in. screen. Mine-run will also be made. In order to bring about this change, a number of improvements will be made in the mines of the company, of which there are 24 in Ohio and 4 in West Virginia. Shaker screens will be installed at all of the operations. One of the mines is about ready to operate under the new plan. Lake shipments during the coming season will all be 6-in. lump.

Nelsonville—The Hocking-Jackson Coal Co. has purchased the property of the Maple-Gallia Coal Co. from Charles Cohenour, the receiver. The property was offered for sale at auction but no bidders appeared. Later the sale was made privately under the direction of the court.

Midvale—Because it was impossible to find a market for the coal produced under the Green Law, Mine No. 3 of the

Midvale Coal Co. has suspended operation for an indefinite period. This throws about 700 men out of work. This is the second large operation in Tuscarawas County which has been forced to suspend operations on account of this law.

INDIANA

Petersburg—W. H. Klipsch has bought from Salem Hammond the property of the Windy City Coal Co. and has taken charge of the mines.

Sullivan—The Gould Coal Washing & Mining Co. has purchased 500 acres of mineral land in Jefferson township and will sink a mine at about the center of the tract, to give employment to about 400 men. The price paid was $35 to $40 an acre.

ILLINOIS

Barclay—There is a strong rumor persistent in Barclay that it is intended to install new machinery and reopen the mine. This operation has been closed for many months.

UTAH

Salt Lake City—It is stated that the Castle Valley and Consolidated Fuel companies, the Black Hawk Coal Co., and the Panther Coal Co. of Utah will be merged Apr. 1 into a company to be known as the United States Fuel Co. This will have a capitalization of ten million dollars. All of the mines are located in Carbon County. E. L. Carpenter, of Salt Lake, will be the president of the new corporation.

PERSONALS

M. D. Kirk has been appointed assistant to President A. W. Calloway, of the Davis Coal & Coke Co., with offices at Cumberland, Md.

William Zeller recently purchased 60 acres of coal land southwest of Brazil, Ind., and expects to sink a mine which will employ 200 men early in the spring.

J. J. Dougherty, of Connellsville, was recently reëlected secretary-treasurer at the Cambria Coal Co. Charles S. Ling, of Johnstown, was also reëlected president.

H. L. Kennedy, who for some time past has been employed in the office of the Wyoming state geologist, has accepted a position with the city government of Laramie, Wyo.

John N. Brewer, superintendent of the Poston Consolidated Coal Co.'s new No. 6 mine at Millfield, Ohio, is an applicant for district inspector of mines in Athens County.

William Roth, who for 40 years has been in the employ of the C. M. Dodson Coal Co., has tendered his resignation to the officials of that concern as assistant superintendent of the Beaver Brook mine.

David Thomas, of St. Clairsville, Ohio, for many years manager of the Provident Coal Co.'s mines at St. Clairsville and Fairpoint, has accepted the position of general manager of the mines of W. H. Warner & Co. of Cleveland. This firm operates 9 mines in three states, and Mr. Thomas will have control of all these properties.

W. G. Conklin, president of the Franklin Savings Bank of New York, recently purchased the property of the Clearview Coal Co. of Scranton, Penn. It is estimated that more than 1,000,000 tons of coal are contained in the tract. Extensive improvements will be made, the coal extracted and used in Mr. Conklin's manufacturing enterprises.

Harry M. McDonald, for the past several years assistant manager of the Washington Coal & Coke Co., has been appointed general manager of that concern. This position has been revived for the first time since the death of J. S. Newmyer, some years ago. Robert M. Polleck has been appointed superintendent and general mine foreman of the company's operations. This company now has 780 of its 1000 ovens in operation.

"Gen." John Jacob Coxey of Massillon is advertising in the Cleveland papers to sell notes of the Massillion Fairpoint Coal Co., which he describes as a coöperative coal mining firm. The miners will be paid at the contract rate and buyers of 6 per cent. notes, he says, will receive stock of an equal par value as a bonus. "We are going to show where the profits from coal mining have been going, and we are going to give the miners a chance to get the reward for their labors to which they are entitled," he says.

OBITUARY

Burns L. Maynard, one of the founders of the Maynard Bros. Coal Co. of Columbus, which was later reorganized into the Maynard Coal Co., died recently at his late home at the age of 65 years. He was an invalid for several years previous to his death. He leaves a brother, Horace H. Maynard, still interested in the Maynard Coal Co.

RECENT COAL AND COKE PATENTS

Mining Tool Car. E. Pyle, Butte, Mont. 1,126,826 Feb. 2, 1915. Filed May 5, 1914. Serial No. 836,471.

Drilling Machine. A. Hossfeld, Lewiston, Minn. 1,127,003 Feb. 2, 1915. Filed July 1, 1914. Serial No. 848,432.

Fire Box for Boilers. C. C. Shaw, Palestine, Texas. 1,127,685 Feb. 9, 1915. Filed Apr. 6, 1914. Serial No. 829,813.

Smoke Dispenser. M. Moser, Ladysmith, British Columbia, Can. 1,128,177 Feb. 9, 1915. Filed Oct. 18, 1913. Serial No. 795,911.

Mining Machine. E. R. Merrill, assignor to Jeffrey Mfg. Co., Columbus, Ohio. 1,127,663. Feb. 9, 1915. Filed July 1, 1910. Serial No. 569,996.

Process of Making Coke and Recovering By Products. C. A. Weeks, Philadelphia, Penn. 1,127,949 Feb. 9, 1915. Filed July 25, 1911. Serial No. 640,472.

Automatic Brake Setting Device for Mine Hoisting Engines. A. W. Charles and C. E. McDonald, Butte, Mont. 1,127,183 Feb. 2, 1915. Filed Apr. 24, 1911. Serial No. 623,121.

CONSTRUCTION NEWS

Murray City, Ohio—The New Pittsburgh Coal Co. is making extensive improvements on the tipple of Mine No. 5. The tracks pass over the main street of the village and this work is being strengthened. A number of other improvements are being made.

Fayetteville, W. Va.—The firm of Jarutolo & Co. has secured the contract for the reconstruction of the stone and concrete work in the Layland mine which was damaged by the recent explosion. It is estimated that it will take several weeks to complete the work.

Paducah, Ky.—W. H. Force, superintendent of the city lighting plant, and L. A. Washington, commissioner of public works, are perfecting plans for the construction of a concrete coal chute by which coal can be dumped directly from railroad cars. This will save handling costs.

Praise, Ky.—The eastern Kentucky Block Coal & Fuel Co headquarters, Roanoke, Va., is beginning the preliminary work looking to a coal development near here on the Carolina Clinchfield & Ohio R.R. The company proposes the development of 1000 acres of coal lands and construction work is to be started by April 1.

Hazard, Ky.—The Harvey Coal Co., recently organized by E. L. Douglas, V. M. Hacker, P. M. Derby and others, will begin at once the development of a large boundary of coal recently leased on Buffalo Creek near here to be reached by a branch line of the Lexington & Eastern. The officials plan a daily output of 1200 tons.

Steubenville, Ohio—Extensions planned by the officials of the La Belle Iron Works Co. will greatly increase the capacity of the plant. It is announced that the company will spend close to $1,000,000 in the erection of byproduct ovens for the manufacture of cokè. An added proposition is pending, namely, purchasing more coal land. Test holes are now being drilled by the company in its present coal land holdings.

Pittsburgh, Penn.—It was recently announced that an outlay of $500,000 would be made by the Carnegie Steel Co. to build a steel tie plant in Homestead at an early date. The new plant will manufacture steel ties and tie specialties. The steel tie business in the past has hardly justified a large outlay of money for special facilities for their manufacture,

but with the ever increasing scarcity of tie timber the business is improving rapidly.

Hazard, Ky.—The Louisville & Nashville R.R. engineers working on extension projects have definitely located a branch from Lothair up Buffalo Creek to Engle Branch, where the road will fork, one line going up Buffalo Creek to a 2000-acre lease and the other up Engle Branch to the Means & Haskins lease of 2000 acres. Work on construction of the line will be begun immediately and the mines are to start operations as soon as the tracks are completed.

Pittsburgh, Penn.—The successful operation of the small plant recently installed at the works of the Cambria Steel Co. for the extraction of benzol as a byproduct in coke manufacture, has prompted the officials of the company to build immediately a similar plant but of three times larger capacity which will recover benzol and other byproducts for the open market. The Carnegie Steel Co. has undertaken an addition to its byproduct coke plant at Farrell, Penn., which will produce benzol from a coke plant consisting of 212 byproduct ovens. The Republic Iron & Steel Co., at Youngstown, Ohio, is adding to its works a byproduct coke plant with the facilities for securing benzol and other chemicals, and the Youngstown Sheet & Tube Co. recently decided to add a plant of similar character to its equipment, the latter will cost approximately $2,000,000.

NEW INCORPORATIONS

Norris, Ill.—The Genuine Norris Coal Mining Co. recently increased its capitalization from $2500 to $15,000.

Beckley, W. Va.—The East Gulf Coal Co. was recently organized with a capital of $100,000. The incorporators are J. L. Bumgardner, A. D. Preston, F. M. Miller, C. O. Dunn and L. R. Bramer, all of Beckley.

Seattle, Wash.—The Black River Coal Co. of Seattle was recently organized by S. E. Harper, R. B. Heaston, and M. W. Dye. Edward E. James is attorney for the company with offices in the Joshua Green Building.

INDUSTRIAL NEWS

New York, N. Y.—After Apr. 1, 1915, the offices of W. J. Rainey will be located in the Vanderbilt Concourse Building, 52 Vanderbilt Ave., at E. 45th St., N. Y.

Lexington, Ky.—The general offices of the Slemp Coal Co., operating mines in Kentucky and West Virginia, were recently moved from Hazard to Lexington.

Louisville, Ky.—The Aetna Explosives Co. has closed its office at Huntington, West Virginia, and transferred it to the Paul Jones Building, Louisville, Kentucky.

Cardiff, Wales—The Italian government has chartered a considerable number of British and other vessels to transport coal from the United States to Italy. It is said this step was due to the difficulty in obtaining supplies of Welsh coal.

Pittsburgh, Penn.—The coal in barges and boats at the landings awaiting a rise in the upper Ohio River, according to local gagers, on Mar. 19 totaled about 2,375,000 bushels and represented more than 10 acres of coal from the mining sections.

Chicago, Ill.—The Chicago office of the Terry Steam Turbine Co. will in the future be in charge of A. W. de Revere, and located in the Peoples Gas Building. An office has also been opened in the Michigan Trust Building, Grand Rapids, Mich., in charge of A. L. Searles, to cover the southern peninsula of Michigan.

Columbus, Ohio—The Hocking Valley Ry. Co. will carry the question of giving electric service on its branch between Jackson and Hamden, Ohio, to the United States Supreme Court. Recently the Ohio Supreme Court ordered the company to give the electric service. The legal questions involved are of great importance to railroad companies in Ohio.

Birmingham, Ala.—The Alabama coal operators have secured the services of W. A. Glascow, Jr., to represent the association in the settlement of the differential in coal rates as against Illinois, Wisconsin and Virginia. The rate given these states as against Alabama is said to be injurious to the developments here. The case will be heard next month.

Baltimore, Md.—The annual report of the Consolidation Coal Co., submitted at the recent stockholders' meeting, showed that in the year 1914, 10,710,017 tons of coal were produced compared with 11,154.989 tons during the previous 12 months. The total earnings from all sources for the year were $14,828,980, while the net earnings from operations were $3,792,645.

New York, N. Y.—It is stated that never in history has the foreign export market shown so many advantages for American operators as during the past few weeks. Contracts have been closed for upwards of 100,000 tons. These contracts represent practically new business in fields where competition usually has been so strong that American houses were unable to make headway.

Whitesburg, Ky.—Traffic on the new Carolina, Clinchfield & Ohio R.R., between Elkhorn City, Ky., and Dante, Va., is to begin immediately, according to information available here. Construction work on the extension has been completed. The road is said to be owned by the Clinchfield Corporation which controls in turn more than 300,000 acres of coal land in Dickinson County, Va.

Hazelton, Penn.—The largest stripping contract ever awarded in the anthracite field was recently given by the Lehigh Valley Coal Co. to Benjamin & Co. This firm of contractors has just completed a job of 12 years' duration in uncovering the coal measures of the Cox Estate at Buck Mountain. The firm starts at once on the new work which will take from 10 to 15 years to complete.

New Haven, Conn.—The Connecticut Transportation Co. formed in this city to operate a fleet of barges carrying coal from New Jersey to Long Island Sound ports has at present five barges in service. Additional barges are being constructed for it by the Gildersleeve Shipbuilding Co. on the Connecticut River. The first of the new fleet, which is of 1000 tons' capacity, was recently put in commission and registered at the New Haven Custom House.

St. Louis, Mo.—Before Examiner F. H. Barclay of the Interstate Commerce Commission, a hearing was recently held, in the suit of the Southern Coal, Coke & Mining Co. against the Wabash R.R. to compel the road to maintain its rate of $2.05 a ton on coal shipped from mines in the Belleville district to Omaha, Neb. It is the contention of the complainant that the railroad reduced its rate on coal, and then after other roads had protested, decided to put it again where it was in the beginning, making a difference of 20c. a ton, during which time the complainant had taken contracts based on the lower freight rate.

Pittston, Penn.—R. A. Maddock, agent of the U. S. Treasury Department, told the council and planning commission that the government would purchase no site for a federal building which did not include all mineral rights. The Reap Estate site does not meet the requirement, the Pennsylvania Coal Co. holding the right to mine the coal. A plan is under way to purchase the coal and give the mineral rights to the government. There is no available site in the central city which meets the government's demand for title to the mineral underlying it. Similar conditions prevail in most of the anthracite cities.

Uniontown, Penn.—The Pickands-Mather Co., of Pittsburgh, has contracted for from 10,000 to 12,000 tons monthly of Orient coke, through the Producers Coke Co., of Uniontown, the contract to run until the end of the year. The coke is for the Perry furnaces at Erie which will be blown in within a week or so.

The Girard Iron Co. has contracted with the J. H. Hillman Sons Co. for approximately the same tonnage for the Girard furnaces which are to be blown in about Apr. 1. These are among the first important coke contracts since the regular movement late last year.

Lexington, Ky.—It is reported currently here that San Francisco capitalists are preparing to begin coal mining operations in the Elkhorn field in Letcher County, having, it is understood, already incorporated in Virginia under the name of the Elkhorn Coal & Fuel Co., and now owning land near Elkhorn City and a tract near Hayside, Va., on the new Carolina, Clinchfield & Ohio R.R. Operations, it is said, will be started upon both tracts. Edward Holley, Pineville mining engineer, is reported already to have drawn plans for the tipples and to have laid off the ground so that work can be continued at once, some preliminary work having been done. The principal office, it is alleged, will be located at Pikeville and it is hoped that shipments can begin in two months. It is said the company has orders for 6000 tons daily for six months for the San Francisco markets, the coal to be carried by rail to Charleston, S. C., and shipped by water via the Panama Canal. W. O. Brothers, of San Francisco, is president of the company and H. V. Brothers, of South Bend, Ind., is secretary-treasurer.

Coal Trade Reviews

General Review

Large anthracite companies going on full working schedules to meet the heavy demand at the spring circular. Contracting in bituminous slower than in previous years. Prompt market flat in all directions. Discouraging outlook in the Lake trade.

With the large companies tuning up operations to something approximating full capacity, it is evident that the opening of the coal year is close at hand. The advent of the spring circular is also forcing the independents to go on heavily curtailed working schedules. Barges are already being loaded for shipment to Eastern points, and the first of the month will see the April movement well under way. There will be a moderate rush for coal though not of the customary proportions.

While moderate concessions have been frequent on new bituminous contracts, the agencies generally express themselves as satisfied with the progress so far, in view of the adverse business conditions. In fact there are indications of an improved tone developing; consumers are awakening to a realization of the fact that there is little probability of their having an opportunity to conduct their negotiations under more auspicious conditions, and are showing a disposition to close. This move is even affecting those whose contracts do not expire for several months yet. It is none the less a fact that the contracting is falling substantially behind last year, and that consumers are notably more critical regarding both quality and prices.

The volume moving on current business continues at an irreducible minimum; there is no snap whatever to the prompt market and the requisitions on contracts are exceedingly light. The only feature of a constructive nature in the present situation has been a substantial increase in the export inquiry.

Contracting in the Pittsburgh district is progressing less favorably, operators apparently being ready to meet substantially lower figures than have prevailed for some time, while buyers are showing little interest even in these prices. Mining operations continue to exceed requirements with the result that there is plenty of free coal available which is subject to frequent cuts. The general tone of the Ohio market is equally depressed; the collapse of the threatened labor trouble in West Virginia has affected the market adversely while the dealers are busily engaged in cleaning up stocks, and manufacturing requirements are reduced to a minimum. It is estimated that between 3,000,000 and 4,000,000 tons will be carried over at the Upper Lake docks, and actual shipping in the Lake trade will probably not get under way before June.

Contracting in the Middle West is also considerably behind former years, consumers evidently holding off in hopes of being able to force still lower prices later. In the prompt market there has been a further slight recession if anything; money is apparently becoming tighter and the situation continues discouraging in every direction with the possible exception of the screening market. There are reports of forced sales of Indiana coal in order to obtain money to meet pay rolls, and even these extremely low prices failed to interest buyers.

ATLANTIC SEABOARD

BOSTON

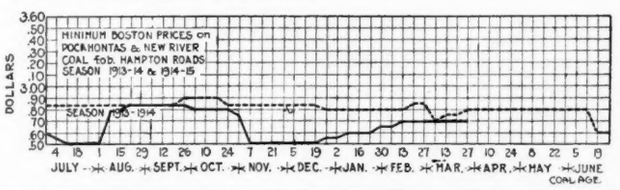
Market conditions dull. Pocahontas and New River inactive with no better outlook for the present. Georges Creek and Pennsylvania grades being pushed to secure renewal of 1914 contracts. Large volume of anthracite coming forward on April prices.

Bituminous—No material change is shown in the market as compared with a week ago. Pocahontas and New River coals are weak wherever there develops any interest on the part of buyers. It is rapidly becoming the accepted thing to renew last year's contracts on the same basis, when possible. In some cases there have been moderate concessions from 1914 figures but this is not general as yet. For steamer delivery, alongside, prices for the season are on the same level as last year; f.o.b. there is practically no spot market. **On cars** Boston and Providence, inquiry is light and prices weak.

It is credibly reported that the New England Coal & Coke Co. has arranged for the purchase of the Long wharf property in Portland, Me., with a view to making it a distributing point for their coals, with facilities for bunkering.

The Georges Creek shippers continue their active canvas for contracts but buyers are listless. Not a great amount of tonnage has been closed.

The same remarks apply to the situation on the better Pennsylvania grades. At most places on tidewater these coals are held at so little under the Hampton Roads fuels that most buyers profess to see no inducement. What was expected to be a good opening has now diminished materially. All-rail trade continues light but more regular than at tidewater. Where the shippers can, they are renewing last year's contract arrangements. While many of the mines are now on a fairly satisfactory output, there is some anxiety over business a month or two hence.



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Anthracite—Heavy shipments of coal on April prices are now coming forward. Retailers are planning to take on what they can but when storage is filled it is likely we shall have a long dull season until coal has moved to the consumer.

Quotations on bituminous rule about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*.....	$0.90@1.40	$1.15@1.60	$1.67@1.77	
Philadelphia*.....	2.15@2.65	2.40@2.85	2.92@3.02	
New York*.....	2.45@2.95	2.70@3.15	3.22@3.32	
Baltimore*.....	.....	.....	2.85@2.95	
Hampton Roads*.	.....	.....	.....	$2.70@2.80
Boston†.....	.....	.....	.....	3.65@3.85
Providence†.....	.....	.....	.....	3.55@3.73

* F.o.b. †On cars.

NEW YORK

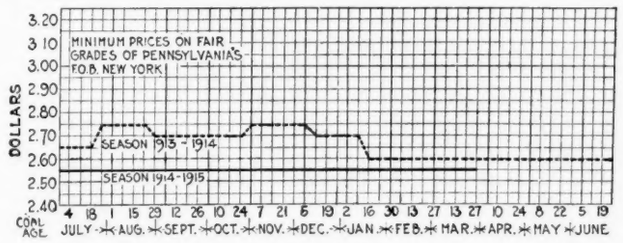
Indications of an upturn in bituminous, though the current movement continues light. Contracting somewhat slow but generally up to expectations. Spring opening in anthracite and April prices the rule.

Bituminous—Conservative observers of market conditions see indications of a turn for the better. Consumers are apparently convinced that they will never have an opportunity to conclude purchases under more advantageous conditions, and there is a more general disposition to close. There are even occasional instances where buyers having contracts which expire several months ahead, are seriously considering immediate purchases in order to be assured of the present advantageous conditions.

Another feature of the negotiations on contracts this year, has been the extraordinary amount of sampling and testing-out of the coal which buyers are doing. Apparently they are investigating the practicability of adopting a lower grade and cheaper product, or are endeavoring to force additional concessions from the producers. But as a general rule the coal agencies uniformly agree that the contracting so far has been even more satisfactory than they anticipated.

The prompt market has scarcely ever been more quiet. The movement has been reduced to a minimum and there is no snap to the trade in any direction. The spasmodic rush which has characterized the bunkering trade for the past several weeks appears to be about over. Rumors are current that the Berwind company is starting salesmen on the

road canvassing for business, but this cannot be confirmed. Prices continue on the same basis as follows: West Virginia steam, $2.35@2.55; fair grades, Pennsylvania, $2.55@2.65; good grades of Pennsylvania, $2.70@2.80; best Miller Pennsylvania, $3.10@3.15; Georges Creek, $3.15@3.25.



Anthracite—With the April discount now definitely at hand, the large companies are beginning to tune up operations to something approaching full capacity, while the individuals are now being forced out of the market and compelled to restrict production; thus Madeira, Hill & Co. were closed down for two days last week. The large companies, however, maintained their former schedule or made increases; the Lehigh Coal & Navigation Co. and the Reading Co. worked three days and the Susquehanna, four days last week. The Reading this week expects to make six full days. Considerable coal was loaded during the week for April shipments and some barges were started on their way to Eastern points. A further reason for the increased operations is seen in the three holidays, Eight Hour Day, Good Friday, and Easter Monday, which all fall close together and will probably be very generally observed.

No demand exists in any direction, in-so-far as the prompt market is concerned. Of the prepared sizes, however, egg is probably in the best condition. Pea coal is not strong and buckwheat is not particularly strong; the higher grades of rice coal are in fair demand, although this is due primarily to shortage resulting from the curtailed operations of the collieries.

The April circular is being quoted in all directions and the market is now as follows:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken	$5.10	$4.60	$5.05	$4.55
Egg	5.35	4.85	5.30	4.80
Stove	5.35	4.85	5.30	4.80
Chestnut	5.60	5.10	5.55	5.05
Pea	3.55	3.55	3.50	3.50
Buckwheat	2.80	2.80	2.50@2.75	2.50@2.75
Rice	2.30	2.30	2.00@2.25	2.00@2.25
Barley	1.80	1.80	1.75	1.75

BUFFALO

Bituminous trade still dull. Contracts are slow to materialize and prices are below those of last year. Considerable consignment coal. Anthracite trade inactive. Many dealers will postpone buying.

Bituminous—No improvement is noted in the volume of business, trade running along at about the same rate as a month ago. Consumers show much indifference to the efforts of salesmen to line them up for next year's contracts and the common course is to buy for the present in the open market. It is admitted by large operators that the outlook for contract prices is not favorable, and such a situation is indicated by the course of prices on municipal contracts, which are being taken at 10 or 15c. below those of a year ago. On industrial business it is stated that the reduction is not quite so large. The quantity of consignment coal coming into the market seems to be on the increase and this has a depressing effect on prices.

The Lake trade is likely to be late in starting this year, as vessel owners show no disposition to begin navigation early. Operators in this line have not begun to talk seriously as to Lake prospects, but there is a general feeling that business will not be as good as last year. In that case slack-coal prices will perhaps gain in firmness, but at present they are weak and the lack of orders is discouraging.

Prices are not showing any change, being $2.80 for Pittsburgh lump, $2.70 for three-quarter, $2.55 for mine-run and $2.15 for slack, with Allegheny Valley prices about 25c. lower than Pittsburgh.

Anthracite—The dealers are postponing their April purchases to a larger extent than usual, announcing that they will be busy with their inventories and repairs to sheds, and may not put in their orders until late in the month. An occasional car is all that is being done in the closing days of the month and on immediate business trade is almost at a standstill. Some representatives predict plenty of business as soon as April arrives, but it is probable that orders will run lighter than last April.

PHILADELPHIA

Anthracite inactive pending opening of new coal year. Mines likely to commence operating full time. Bituminous quiet.

Anthracite—The end of the week finds the large anthracite companies in full operation at their mines to take care of the heavy demand during the month of April. As usual, the orders are likely to exceed the amount of coal mined, but at the same time there seems to be a lack of snap to the market. Dealers placing orders appear to take it for granted that they will be filled during the month and it is doubtful if any have been turned down as is often the case on April business. It is undoubtedly a fact that there is already considerable company coal going forward at the April or opening prices. This policy is one of self protection, as dealers have no difficulty in securing all the coal they require at April prices.

Retail dealers are looking forward to a fairly good business for the month of April and May, but anticipate no rush on the part of the consumer to secure supplies. Stocks have been fairly well depleted, although some of the large dealers it is understood will carry over considerable coal, but not all purchased at the maximum price. The opening prices are announced to be as follows:

	Circular
Broken	$4.25
Egg and stove	4.50
Chestnut	4.75

Bituminous—Conditions remain quiet, and buyers have no difficulty in securing coal at almost their own figure.

BALTIMORE

Heavy Italian export shipments. Coastwise business light, and general domestic trade poor. Contracts slow and at reduced prices.

The livest feature of the coal trade here continues to be the export business; much of this is to Italian ports, and it is generally believed here that the Italian government is accumulating a good part of the fuel for naval eventualities. The Keystone Coal & Coke Co. has closed a contract for 50,000 tons for Mediterranean delivery. Already the Italian shipments have grown by leaps and bounds, until the export to that country forms nearly one-third of the total coal moving from this port on foreign account.

Coastwise business is light, and shipments are confined entirely to contract coal. Charter rates remain exceptionally high, as many coastwise vessels have been turned over to long distance hauling on foreign charters.

The spot business in this section is almost dead. Coal is offering very cheap. The only thing to show any strength is slack, which is selling in West Virginia around 70c.; this is because no three-quarter gas is being made. Steam coals of lower grade are offering at from 80 to 90c. and with but few takers. Best coals sell around $1.25.

Contracting is none too brisk and the number closed is below that of last year. Discounts of from five, to in some cases 15c., off last year's figures have undoubtedly been given by some producers.

Anthracite dealers report but little doing.

OCEAN FREIGHTS

Demand slows up but rates are well maintained.

The demand for steamers for grain is not so urgent and there were more steamers offered for other trades, on which rates were well sustained. We chartered a large British steamer for coals to the Plate at $9.60, April-May loading, and there are a number of similar orders in the market, but parties have been unable to secure tonnage at less than this figure. Outward rates to the West Indies are firmer than a week ago, with but few steamers available for this business.

Coal freights by steamers are about as follows:

To	Rate	To	Rate
Havana	**$2.75**	Guantanamo	**$3.25@3.75**
Cardenas or Sagua	3.50@3.75	Demerara	5.50@6.00
Cienfuegos	**3.00**	Bermuda	3.00@4.00
Port au Spain, Trinidad	**3.75**	Vera Cruz	**3.50**
St. Lucia	3.50@3.75	Tampico	**3.50**
St. Thomas	**3.25**	Rio	**10.20**
Barbados	**3.75**	Montevideo, Buenos Aires or La Plata	**9.60**
Kingston	3.00@3.25	Mediterranean	**12.00**
Curacao	**3.50**	Valparaiso	8.40@9.60
Santiago	3.25@3.75		

Note—Rates noted in **bold face type** are only approximate.
W. W. Battie & Co.'s Coal Trade Freight Report.

HAMPTON ROADS

Both cargo and bunker movement from Hampton Roads is fair. Prices remain at circular. Demand light.

Dumpings over tidewater piers for the week have been as heavy as could be expected. A number of cargoes have moved in the foreign trade and the coastwise shipments have shown up well. In addition to this some coal has been supplied the government and bunker takings will amount to a fair

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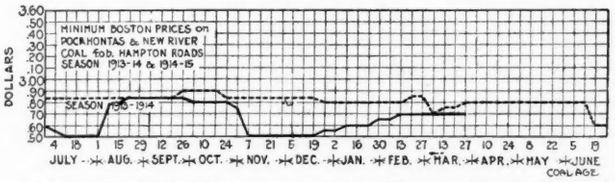

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Baltimore*.....	.....	.....	2.85@2.95	
Hampton Roads*.	.....	.....	.....	$2.70@2.80
Boston†.....	.....	.....	.....	3.65@3.85
Providence†.....	.....	.....	.....	3.55@3.73

* F.o.b. †On cars.

NEW YORK

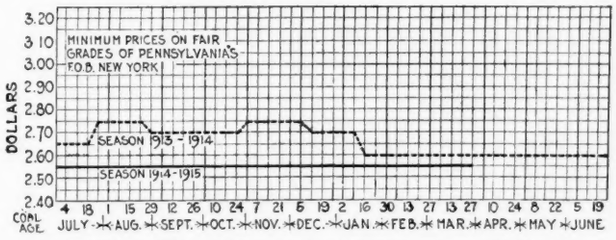
Indications of an upturn in bituminous, though the current movement continues light. Contracting somewhat slow but generally up to expectations. Spring opening in anthracite and April prices the rule.

Bituminous—Conservative observers of market conditions see indications of a turn for the better. Consumers are apparently convinced that they will never have an opportunity to conclude purchases under more advantageous conditions, and there is a more general disposition to close. There are even occasional instances where buyers having contracts which expire several months ahead, are seriously considering immediate purchases in order to be assured of the present advantageous conditions.

Another feature of the negotiations on contracts this year, has been the extraordinary amount of sampling and testing-out of the coal which buyers are doing. Apparently they are investigating the practicability of adopting a lower grade and cheaper product, or are endeavoring to force additional concessions from the producers. But as a general rule the coal agencies uniformly agree that the contracting so far has been even more satisfactory than they anticipated.

The prompt market has scarcely ever been more quiet. The movement has been reduced to a minimum and there is no snap to the trade in any direction. The spasmodic rush which has characterized the bunkering trade for the past several weeks appears to be about over. Rumors are current that the Berwind company is starting salesmen on the

road canvassing for business, but this cannot be confirmed. Prices continue on the same basis as follows: West Virginia steam, $2.35@2.55; fair grades, Pennsylvania, $2.55@2.65; good grades of Pennsylvania, $2.70@2.80; best Miller Pennsylvania, $3.10@3.15; Georges Creek, $3.15@3.25.



Anthracite—With the April discount now definitely at hand, the large companies are beginning to tune up operations to something approaching full capacity, while the individuals are now being forced out of the market and compelled to restrict production; thus Madeira, Hill & Co. were closed down for two days last week. The large companies, however, maintained their former schedule or made increases; the Lehigh Coal & Navigation Co. and the Reading Co. worked three days and the Susquehanna, four days last week. The Reading this week expects to make six full days. Considerable coal was loaded during the week for April shipments and some barges were started on their way to Eastern points. A further reason for the increased operations is seen in the three holidays, Eight Hour Day, Good Friday, and Easter Monday, which all fall close together and will probably be very generally observed.

No demand exists in any direction, in-so-far as the prompt market is concerned. Of the prepared sizes, however, egg is probably in the best condition. Pea coal is not strong and buckwheat is not particularly strong; the higher grades of rice coal are in fair demand, although this is due primarily to shortage resulting from the curtailed operations of the collieries.

The April circular is being quoted in all directions and the market is now as follows:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken	$5.10	$4.60	$5.05	$4.55
Egg	5.35	4.85	5.30	4.80
Stove	5.35	4.85	5.30	4.80
Chestnut	5.60	5.10	5.55	5.05
Pea	3.55	3.55	3.50	3.50
Buckwheat	2.80	2.80	2.50@2.75	2.50@2.75
Rice	2.30	2.30	2.00@2.25	2.00@2.25
Barley	1.80	1.80	1.75	1.75

BUFFALO

Bituminous trade still dull. Contracts are slow to materialize and prices are below those of last year. Considerable consignment coal. Anthracite trade inactive. Many dealers will postpone buying.

Bituminous—No improvement is noted in the volume of business, trade running along at about the same rate as a month ago. Consumers show much indifference to the efforts of salesmen to line them up for next year's contracts and the common course is to buy for the present in the open market. It is admitted by large operators that the outlook for contract prices is not favorable, and such a situation is indicated by the course of prices on municipal contracts, which are being taken at 10 or 15c. below those of a year ago. On industrial business it is stated that the reduction is not quite so large. The quantity of consignment coal coming into the market seems to be on the increase and this has a depressing effect on prices.

The Lake trade is likely to be late in starting this year, as vessel owners show no disposition to begin navigation early. Operators in this line have not begun to talk seriously as to Lake prospects, but there is a general feeling that business will not be as good as last year. In that case slack-coal prices will perhaps gain in firmness, but at present they are weak and the lack of orders is discouraging.

Prices are not showing any change, being $2.80 for Pittsburgh lump, $2.70 for three-quarter, $2.55 for mine-run and $2.15 for slack, with Allegheny Valley prices about 25c. lower than Pittsburgh.

Anthracite—The dealers are postponing their April purchases to a larger extent than usual, announcing that they will be busy with their inventories and repairs to sheds, and may not put in their orders until late in the month. An occasional car is all that is being done in the closing days of the month and on immediate business trade is almost at a standstill. Some representatives predict plenty of business as soon as April arrives, but it is probable that orders will run lighter than last April.

PHILADELPHIA

Anthracite inactive pending opening of new coal year. Mines likely to commence operating full time. Bituminous quiet.

Anthracite—The end of the week finds the large anthracite companies in full operation at their mines to take care of the heavy demand during the month of April. As usual, the orders are likely to exceed the amount of coal mined, but at the same time there seems to be a lack of snap to the market. Dealers placing orders appear to take it for granted that they will be filled during the month and it is doubtful if any have been turned down as is often the case on April business. It is undoubtedly a fact that there is already considerable company coal going forward at the April or opening prices. This policy is one of self protection, as dealers have no difficulty in securing all the coal they require at April prices.

Retail dealers are looking forward to a fairly good business for the month of April and May, but anticipate no rush on the part of the consumer to secure supplies. Stocks have been fairly well depleted, although some of the large dealers it is understood will carry over considerable coal, but not all purchased at the maximum price. The opening prices are announced to be as follows:

	Circular
Broken	$4.25
Egg and stove	4.50
Chestnut	4.75

Bituminous—Conditions remain quiet, and buyers have no difficulty in securing coal at almost their own figure.

BALTIMORE

Heavy Italian export shipments. Coastwise business light, and general domestic trade poor. Contracts slow and at reduced prices.

The livest feature of the coal trade here continues to be the export business; much of this is to Italian ports, and it is generally believed here that the Italian government is accumulating a good part of the fuel for naval eventualities. The Keystone Coal & Coke Co. has closed a contract for 50,000 tons for Mediterranean delivery. Already the Italian shipments have grown by leaps and bounds, until the export to that country forms nearly one-third of the total coal moving from this port on foreign account.

Coastwise business is light, and shipments are confined entirely to contract coal. Charter rates remain exceptionally high, as many coastwise vessels have been turned over to long distance hauling on foreign charters.

The spot business in this section is almost dead. Coal is offering very cheap. The only thing to show any strength is slack, which is selling in West Virginia around 70c.; this is because no three-quarter gas is being made. Steam coals of lower grade are offering at from 80 to 90c. and with but few takers. Best coals sell around $1.25.

Contracting is none too brisk and the number closed is below that of last year. Discounts of from five, to in some cases 15c., off last year's figures have undoubtedly been given by some producers.

Anthracite dealers report but little doing.

OCEAN FREIGHTS

Demand slows up but rates are well maintained.

The demand for steamers for grain is not so urgent and there were more steamers offered for other trades, on which rates were well sustained. We chartered a large British steamer for coals to the Plate at $9.60, April-May loading, and there are a number of similar orders in the market, but parties have been unable to secure tonnage at less than this figure. Outward rates to the West Indies are firmer than a week ago, with but few steamers available for this business.

Coal freights by steamers are about as follows:

To	Rate	To	Rate
Havana	**$2.75**	Guantanamo	**$3.25@3.75**
Cardenas or Sagua	3.50@3.75	Demerara	5.50@6.00
Cienfuegos	**3.00**	Bermuda	3.00@4.00
Port au Spain, Trinidad	**3.75**	Vera Cruz	**3.50**
St. Lucia	3.50@3.75	Tampico	**3.50**
St. Thomas	**3.25**	Rio	**10.20**
Barbados	**3.75**	Montevideo, Buenos Aires or La Plata	**9.60**
Kingston	3.00@3.25	Mediterranean	**12.00**
Curacao	**3.50**	Valparaiso	8.40@9.60
Santiago	3.25@3.75		

Note—Rates noted in **bold face** type are only approximate.
W. W. Battie & Co.'s Coal Trade Freight Report.

HAMPTON ROADS

Both cargo and bunker movement from Hampton Roads is fair. Prices remain at circular. Demand light.

Dumpings over tidewater piers for the week have been as heavy as could be expected. A number of cargoes have moved in the foreign trade and the coastwise shipments have shown up well. In addition to this some coal has been supplied the government and bunker takings will amount to a fair

tonnage. As is usually the case the coastwise shipments have practically all been to New England ports and in a majority of cases the cargoes have been supplied on contract. Owing to the fact that several of the large coasting steamers and schooners have been placed in the export trade, the movement coastwise is being taken care of largely by barges at the present time.

Prices on New River and Pocahontas mine-run remain at circular and while some cut is being made in the prepared grades and high volatiles it is difficult to ascertain at exactly what price these coals are being sold. Some of the shippers are known to have a large quantity of nut and slack at tidewater which has been on hand for some time.

The heaviest export shipment to any one port during the week went to Cristobal, Canal Zone; about 12,000 to 12,500 tons having moved for that port. The accumulation of coal in the railway yards is still above normal with little prospect of any heavy reduction being made during the coming week as the coal coming forward will take care of a large percentage of the vessel tonnage due.

Vessels loading at Hampton Roads between Mar. 12 and 19, inclusive, were:

Norfolk			Newport News		
Vessel	Tons	Destination	Vessel	Tons	Destination
Trodenskjold	5500	Cristobal	**Parana**	5800	Rio de Janeiro
Bayard Barnes	2500	Para	**Moldegaard**	3987	Havana
E. J. Lawrence	5299	Guantanama	Horace Bickford	800	Cienfuegos
Antares	2676	Port au Spain			
Wegadesk	6500	Cristobal			
Dorothy Palmer	4070	Rio de Janeiro			
Belmont (bark)	2409	Buenos Aires			
Eliz. T. Doyle	989	Maranham			
Vinland	1400	Manzanillo			

Note—Steamers are indicated by **bold face type**, all others being schooners.

OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
Liberis	British	Atlantic Range	River Plate	2625	$9.60
Alice M. Colburn		Philadelphia	Portland	1335	
Gerasimos	Greek	Atlantic Range	Italy	2379	12.00
Albania	Italian	Atlantic Range	Italy	2782	
Thorsa	Norwegian	Philadelphia	Havana	683	
Cora F. Cressey		Norfolk	Rio Janeiro	2089	7.25
Oakley C. Curtis		Norfolk	Rio Janeiro	2000	
Edith S. Cummins		Philadelphia	Brazil	545	5.70
Bayard Hopkins		Philadelphia	Jacksonville	212	1.00
Janeta	British	Baltimore	Buenos Aires	2779	
Iolo	British	Virginia	Rio Janeiro	2502	9.60

Note—Steamers are indicated by **bold face type**, all others being schooners.

OHIO VALLEY

PITTSBURGH

Mining operations at about 60% and well in excess of demand. Contracting proceeding very slowly. Lake season will open late, and no prices named yet.

Contracting for the twelvemonth beginning Apr. 1 is still proceeding at a slow rate and prospects are that the date will be reached with a smaller volume of coal under contract than in any year for a long period, when there was not the deterrent of wage adjustment to be made. The slackness cannot be ascribed to unwillingness on the part of sellers to negotiate, on account of the low prices, for sellers are quite willing to do business at figures that in all probability represent a smaller margin above wage cost than has obtained at any time for a decade. Buyers seem content to wait, manifesting no fear that the low prices may get away from them. As indicated in previous reports, the top asking price on twelvemonth contracts is practically not above $1.15 for mine-run coal.

No announcement has been made yet by any of the sellers as to prices on Lake coal, and this may possibly be delayed for some time, it being understood that Lake vessel interests have arranged to open the shipping season at the beginning of June instead of when physical conditions on the Lakes permit, as is usually the case.

Domestic demand continues slack and practically on a spring basis. Shipments to regular users on contract are approximately the same as in the past few weeks, while the continued presence of a plethora of free coal indicates that mining operations, now estimated roughly at about 60% of nominal capacity, are entirely too heavy for the demand as it exists. For free coal, subject to frequent shading in special cases, we quote the market approximately as follows: Slack, 90c.@$1; nut and slack, 95c.@$1.05; nut, $1.05@1.10; mine-run, $1.05@1.10c.; ¾-in., $1.15@1.20; 1¼-in., $1.25@1.30, per net ton at mine.

COLUMBUS

Trade continues quiet in every way. Domestic and steam demand both slow. The Lake trade will be late in opening. Production is still small.

The coal trade in Ohio has been quiet in every way during the past week. Warm weather has continued and domestic trade is only spotty; there is nothing to cause any activity in coal circles. On the whole the tone of the market is not good and future prospects are not the brightest.

Domestic trade is at a standstill in every way. Dealers are cleaning their stocks and only buying when it is an absolute necessity and as a result of this attitude orders from that source are small.

Steam business is slow all along the line. Factories are not consuming a large tonnage and manufacturing is not improving as was hoped. Railroads are taking a fair tonnage for fuel purposes. Quite a few steam contracts expired recently and some have been renewed at the former figures. Several railroad contracts have been concluded but most are still hanging fire. Contracting is being done under considerable difficulties.

Little is expected of the Lake trade until about July 1. Reports from the Northwest show that between 3,000,000 and 4,000,000 tons will be carried over and thus there will not be much demand early in the season. Chartering of boats is slow and it is doubtful if there will be much rush for bottoms.

Production has been low. The Hocking Valley, Jackson, Cambridge, Crooksville and Massillon districts produced only about 30% of normal and in the Pomeroy Bend the output is about 35% of the average.

Some strength is shown in the small sizes, due to the limited production. Nut, pea and slack is sold at fair prices in all sections. Anthracite is moving in small quantities.

Prices in the Ohio fields are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump	$1.45	$1.50	.....
Inch and a quarter	1.30	1.35	$1.30
Three-quarter inch	1.25	1.30	1.25
Nut	1.15	1.25	1.15
Mine-run	1.05	1.10	1.05
Nut, pea and slack	0.65	0.70	0.60
Coarse slack	0.55	0.60	0.50

CLEVELAND

Wholesale market very quiet with small receipts. The retail trade is down to half-ton orders to fill out, and the Lake business shows no signs of life.

The spot market is slightly lower than shipment prices. The fine coal trade is taking all that is coming in at $1.70 to $1.75 and is keeping the coarse coal cleaned up at prices from five to ten cents below shipment quotations. Receipts are light and the operators are afraid to overload the market.

Lake shippers are not contracting extensively. One company has closed this week for 400,000 tons of ship capacity through the season, but shipping will not begin early. No soft coal is being loaded into boats and the yard tracks are empty though Lake shipping is possible now.

Some hard coal is being booked for April delivery, but the shipments will not be so large as a year ago as dealers still have stocks received during the summer. Special sizes are running low and will be replaced as usual.

Quotations for shipment are as follows:

	Pocahontas	Youghiogheny	Bergholz	Fairmont	W. Va. No. 8
Lump	$2.95	.....	.....	.....	.....
Lump, 6 in.	.....	.....	$2.30	.....	.....
Lump, 1¼ in.	.....	$2.35	2.10	.....	.....
Lump, ¾ in.	.....	2.20	2.00	$1.90	$1.90@2.00
Egg	2.95	.....	.....	.....	.....
Egg, 6 in.	.....	.....	1.95	.....	.....
Mine run	2.45@2.50	2.10	1.90	1.80	1.75@1.90
Slack	.....	1.90	1.80	1.90	.....

CINCINNATI

Market continues dull. Demand lacking in all departments. Consumers showing no interest in contracts.

In spite of a flurry of wintry weather last week, which momentarily stimulated the demand for domestic coal there has been an almost complete lack of business. The steam market is apparently no longer affected by the shortage of screenings caused by the small amount of the prepared grades made, this being largely offset by the heavier offerings of mine-run. The settlement of the West Virginia labor situation has also naturally had a depressing effect on the market, and prices are sagging somewhat in consequence.

However, what contracts are being closed are at fair figures. The principal factor in the contract market now is the growing tendency among consumers to hold off until midsummer. This, together with the fact that both industrial and railroad consumption is very low, has been largely responsible for the present inaction, although of course this period is always slow.

LOUISVILLE

Production of domestic coals still further curtailed and negotiations on new contracts are slow.

The unfavorable conditions in the local market still continue. There has been practically no change, except that the production of domestic coals is still more curtailed. There is little doing in the way of contracts with retailers for their next season's coal. Prices are practically unchanged, except as to nut and slack—the highest grades of which range from 70 to 75c., due to decrease in the supply and reduced rate of production in connection with restricted output of the block coals.

COKE

CONNELLSVILLE

Two good sized furnace coke contracts placed at approximately the market. Prompt coke dull and unchanged. Production and shipments slightly heavier.

The only furnace coke contracts of any consequence placed since the regular movement late in the old year have just been closed. The Orient Coke Co., through the Producers Coke Co., has contracted with Pickands, Mather & Co., for the Perry Furnace at Erie, Penn., for 10,000 to 12,000 tons a month to the end of the year, while J. H. Hillman & Sons Co. has sold the Girard Iron Co., for its Mattie Furnace at Girard, Ohio, about an equal tonnage to the end of the year. Both furnaces are to be blown in about Apr. 1, after having been idle for several months. The asking price of $1.75, on contracts to the end of the year, has lately been regarded as more or less nominal, and probabilities are that these contracts were closed at a few cents a ton less.

There is hardly enough demand for prompt furnace coke to make a market, but while some brands can be had at $1.50 it is understood a few favorite grades have been bringing $1.60 for small tonnages. We quote: Prompt furnace, $1.50@1.60; contracts to July 1, $1.60; to Dec. 31, $1.75; prompt foundry, $2@2.35; contract foundry, nominal, $2.10@2.30, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Mar. 13 at 279,727 tons, an increase of 5075 tons, and shipments at 279,352 tons, an increase of 5248 tons.

Buffalo—Very little new business is developing and sellers report that trade is on an unusually poor basis for the season. The steel trade here shows some improvement over a few months ago, but plants are still operating at a reduced basis. Prices are low and unchanged at $4.25 for best 72-hr. Connellsville foundry and $3.30 for stock coke.

Cleveland—The coke trade is improving and is better than it has been all winter. The foundries are working longer and steadier than they have been. There is still room for improvement, however.

Chicago—Prices for all grades of coke remain practically unchanged. A limited amount of byproduct coke is reported as having been sold under prevailing market prices. There is only a fair demand for furnace and foundry sizes. Prices are as follows: Byproduct, $4.45@4.75; Connellsville, $4.65@4.80; Wise County 72-hr. (select), $4.50@4.75; gas coke, $4@4.10; furnace, $4.40@4.65.

St. Louis—Few scattering inquiries on foundry coke, but in a general way the market is exceptionally quiet. Byproduct coke is almost an unknown factor to the local trade now, whereas a few years ago it moved in heavy volume. Some few contracts are being considered for byproduct, in a domestic way, for the coming season. Local gas-house coke still continues to dominate the domestic market here, principally on account of price. It is figured that in the year ending Apr. 1 the local consumption of gas-house coke will have been from 85,000 to 90,000 or 100,000 tons. The Koppers byproduct plant in Carondelet will be put in operation in May, and will have a capacity of 250,000 tons of foundry and domestic coke per year. The crushing and screening plant for the domestic coke is now being erected.

THE STEEL INDUSTRY

Attractive prices bring out some heavy orders. Still further business anticipated. Some sections still maintain old prices.

Buffalo furnace companies have shaken the pig-iron market out of its stagnation in the past week by offering their product at prices attractive enough to bring over 175,000 tons to their order books. The bulk of the business was done in three or four days and the end of the movement has not yet been seen.

New York, New England and New Jersey foundries took hold freely as the Buffalo cut became general, and some buyers covered for the entire year. Most of the sales were for the second half, and while a number of 5000-ton lots were included there were scores of sales of 500 and 1000 tons.

So quietly was the Buffalo coup executed that other districts scarcely felt a tremor, but it is to be expected that, as in November, when Buffalo furnaces sold 250,000 tons in 10 days, foundrymen in the Central West and the Chicago district will come into the market. Thus far furnace companies in those sections have not offered concessions such as have resulted from the large production of Buffalo iron, but in the Cleveland district in the past week lower prices have been made on Indiana business. These with the unsettling of Southern prices due to liquidation of warrant iron have made a weak market. However, some important Southern makers have refused offers of $9.25, Birmingham, for the second half.—"The Iron Age."

MIDDLE WESTERN

CHICAGO

Inactivity prevails. Screenings stiffer but other grades dull. Smokeless situation improving.

The general market situation in Chicago remains decidedly inactive except in screenings, for which the demand has been strong with rising prices; the activity in this grade shows a tendency to bring about an improvement in the other small sizes of steam coals and to a limited extent it is causing a betterment in the demand for mine-run. Local industries and manufacturing interests are on an operating basis approximating 60% of normal, but there are signs pointing to a betterment in the near future.

Contracting does not make the progress of other years, and there are evidences here and there of price cutting. A large amount of contract tonnage is usually tied up at this time, but consumers are apparently holding off until after Apr. 1 when they evidently expect to be able to influence lower prices. Less demurrage coal is reported on the market, particularly in smokeless grades.

Southern Illinois operators are holding together on prices, although sales are at a very low ebb on all sizes except fine coals.

Franklin and Williamson County operators are doing little business in domestic sizes, but their demand for steam coals has been in excess of production.

Slightly increased railroad shipments have been made from the Springfield district. Screenings are about on a parity with last week.

The smokeless situation is weak, and some demurrage coal has been sacrificed, but there are signs that the producers are going to a firmer basis.

Splint coals are in fair shape. Consignment coal has been cleaned up, and some gas coal has been sold at fair figures considering general conditions.

The tonnage of eastern Kentucky coals sold or moved has been below the minimum, and prices are most variable.

The demand for anthracite is very moderate, and absorption of shipments below the minimum at this time of the year. Evidently most of the anthracite buyers are waiting until April to place orders. The independents are still selling few shipments in this territory at prices below list.

Prevailing prices are as follows:

	Williamson and Franklin Cos.	Springfield	Sullivan	Clinton	Carterville
Lump	$1.40@1.50	$1.25@1.40	$1.25@1.40	$1.25@1.40	$1.50@1.75
4-in. lump	....	....	....	....	....
Steam lump	....	....	....	1.15@1.25	....
2½-in. lump	....	....	1.25@1.35	....	....
1½-in. lump	....	....	1.20@1.25	....	....
Mine-run	1.10	1.00@1.10	1.00@1.10	1.00@1.10	....
Egg	1.30@1.50	1.20@1.35	1.20@1.35	1.20@1.30	....
No.1washed	1.25@1.50	....	....	....	1.25@1.50
No.2washed	1.25@1.50	....	....	....	1.25@1.40
6x3-in. egg	....	....	....	....	1.30@1.65
Nut	....	1.15@1.25	1.10@1.25	1.10@1.20	....
No. 1 nut	1.30@1.50	....	....	....	....
No. 2 nut	1.20@1.35	....	....	....	....
Screenings	0.85@0.95	0.80@0.90	0.80@0.85	0.80@0.85	0.85@0.95

	Saline Co.	E. Kentucky	N. Riv. & Poca.	Somerset	Hocking
Lump	$1.35@1.50	$1.15@1.40	$1.40@1.60	$1.40@1.50	....
1¼-in. lump	1.15@1.25	1.00@1.25	....	....	$1.25@1.50
Mine-run	1.00@1.10	....	0.90@1.15	1.00@1.15	1.00@1.25
Egg	1.20@1.35	1.00@1.15	1.40@1.50	1.40@1.50	....
No. 1 nut	1.35@1.50	....	....	....	....
No. 2 nut	1.30@1.40	....	....	....	....
Screenings	0.85@0.95	....	....	....	....

Knox and Greene County 5-in. lump, $1.35@1.50; 3-in. lump, $1.20@1.30; 5-in. egg, $1.15@1.25; 3-in. egg, $1.10@1.25; mine-run, $1.05@1.10; screenings, 80@90c.

ST. LOUIS

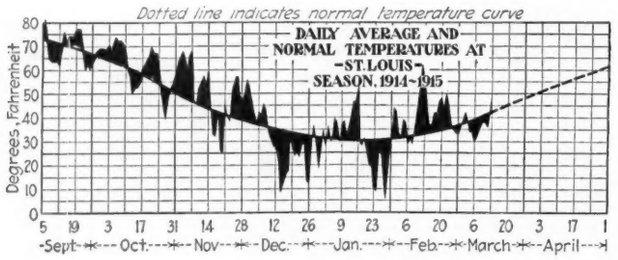
Market completely stagnant and business has taken another slight relapse. No indications of any improvement.

Absolute stagnation prevails in the local market. The greatest disappointment has been in screenings, which everybody expected to advance as the demand for lump dropped off: not only has the price of lump remained stationary, but screenings from both the high grade and inner district have fallen off from 5 to 15c. per ton. The reason for this lies in the fact that there is absolutely no demand for steam sizes, outside of the business taken care of by contract.

In a general way business conditions seem to be getting just a trifle worse in the Central West than has been the case for several months past. There is a tightening up of money in all directions and even among those who in the past have been considered gilt-edge.

There is very little change in the domestic market on high grade coals and in the Standard field conditions are practically the same. There is nothing at this time to indicate that the market will be any better in the next week or two, unless an unexpected cold wave comes along, which is not likely.

Some little anthracite continues to be ordered for April shipment, but much less than in past years, and it is not likely to improve. There is no smokeless at all moving in, and the demand for this grade seems to be dropping off.



INDIANAPOLIS

Some mines making much better running time, a few being at capacity. Slight industrial betterment in the state. Mine prices still at summer level.

Conditions continue unchanged but several of the companies are making much better time at the mines. This may by due to a more or less spasmodic demand from various sources at the same time. The movement of domestic grades is large enough to supply sufficient screenings to keep the price below 90c., though the offering of mine-run at $1 and even lower helps take the strain off the demand for slack. Prices are still generally at a summer level. Retailers are buying cautiously so as to avoid having to carry over stocks of any material size. They report a certain falling off in business but not enough for serious complaint. Reports show an increase of working forces at many factories whose products may be used by warring nations. The retail yards have not yet come down from their winter price schedule.

KANSAS CITY

Retail trade has taken a spurt since the heavy snow fall. Steam coal is moving more steadily, but in the wholesale line there is practically no domestic demand.

There have been several interesting facts due to the fall of 14 in. of snow lately in Kansas City, and the accompanying period of cold weather. The retail trade felt an impetus but not to the extent that might have been expected. Householders who had allowed their coal supply to drop to a low point did not buy coal in even half of the instances; instead they depended on natural gas, which is abundant and cheap in Kansas City. So general was the practice that the gas pressure fell abnormally low, and was not always available, although this did not happen earlier in the winter when much colder weather prevailed. Another effect of the snow was to prevent the operation of the 25 or 30 steam shovels which are being used in mining a large vein in southern Kansas.

PRODUCTION AND TRANSPORTATION STATISTICS

THE CAR SITUATION

Gross surplus of idle coal cars Mar. 1 amounted to 158,293 and the shortage was 14.

PENNSYLVANIA RAILROAD

The following is a statement of shipments over the P. R.R. Co.'s lines east of Pittsburgh and Erie for February of the current year and the two months of 1914 and 1915, in short tons:

	February		Two Months	
	1915	1914	1915	1914
Anthracite	771,328	705,020	1,665,857	1,620,047
Bituminous	3,031,069	3,556,665	6,602,414	7,674,179
Coke	741,757	819,486	1,427,303	1,672,898
Total	4,544,154	6,081,171	9,695,574	10,967,124

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for January and the seven months of the fiscal years 1914 and 1915, in short tons:

	January				Seven Months			
Destination	1915	%	1914	%	1915	%	1914	%
Tidewater	299,863	18	408,994	25	2,097,320	17	2,023,497	19
East	209,624	12	300,426	18	1,492,374	12	1,555,035	15
West	1,113,588	66	887,284	54	8,436,425	66	6,568,361	61
Total	1,623,075		1,596,704		12,026,119		10,146,893	
From Connections								
Bituminous	66,696	4	47,448	3	655,129	5	671,724	6
Anthracite	769		1,043		9,604		9,413	
Total	1,690,540	100	1,645,195	100	12,690,852	100	10,828,030	100
Coke	11,437		34,256		102,314		215,253	

NORFOLK & WESTERN

Destination of shipments over this road for February of this year, the two months of this year and last year were as follows, in short tons:

	February		Two Months	
Coal	1914	1915	1914	1915
Tidewater, foreign	119,110	92,375	196,625	270,425
Tidewater, coastwise	311,679	265,018	525,569	649,333
Domestic	1,235,686	1,263,628	2,785,765	2,712,531
Coke				
Tidewater, foreign	15	1,096	1,510	15
Domestic	95,854	67,489	137,290	214,599
Total	1,762,344	1,689,606	3,646,759	3,846,903

FOREIGN MARKETS

GREAT BRITAIN

Labor difficulties still cause anxiety. Prices continue to advance. Bunker trade active.

Mar. 12—Supplies continue very scarce. The superior qualities of Admiralty coals are quite unobtainable. Prices are approximately as follows:

Best Welsh steam	Nominal	Best Monmouthshires	$7.08@7.20
Best seconds	Nominal	Seconds	6.96@7.08
Seconds	$7.08@7.20	Best Cardiff smalls	4.92@5.16
Best dry coals	6.96@7.20	Cargo smalls	4.44@4.68

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport both net, exclusive of wharfage.

Freights—The market continues strong, but chartering is somewhat restricted owing to stemming difficulties. Rates are approximately as follows:

Gibraltar	$5.04	Naples	$7.68	Las Palmas	$5.04
Malta	....	Venice, Ancona	10.20	St. Vincent	5.28
Marseilles	6.75	Alexandria	7.80	Rio Janeiro	7.56
Algiers	5.79	Port Said	7.32	Monte Video	7.56
Genoa	7.80			River Plate	7.80

London, Mar. 12—The labor outlook in the coal industry is by no means free from causes for anxiety, for the prevailing industrial unrest is at least as prevalent among the miners as any other class. It seems probable that a temporary settlement extending over the period of the war will be effected in South Wales, but next week a national conference is to consider the question of demanding an immediate advance of wages, regardless of any agreements.

Meanwhile, trade is brisk, and the output generally moves away as rapidly as railway difficulties will allow. A feature of the situation is the upward course of the market in Wales and the North of England, prices in both districts having remained at a relatively low level until just recently. House coal appears to have a weaker tendency, but practically all other kinds are strong.

Bunkers are in active request and in short supply for early loading. Practically for the first time since the outbreak of war, the boats offering for charter are equal to, if not in excess of, the inquiry. This, of course, is due to the longer loading turns, which make it difficult to take up the boats offering. There is no doubt that the recent rise in coal is largely due to this fuller supply of shipping.—"The Iron and Coal Trade Review."

Coal Contracts Pending

In the accompanying table we print a recapitulation of all impending negotiations coming up for consideration on April 1; it covers contracts expiring on that date, new contracts to be closed, bids to be opened or closed as the case may be, etc. Since the number is so large that it would obviously be impracticable to follow our customary plan of repeating all the details regarding each item, the following table, arranged geographically, has been adopted. In this table we give the name of the prospective purchaser, address, tonnage involved, our contract number, and page on which the original notice appeared except where it is run for the first time in this issue. Those desiring additional details can, therefore, readily obtain them by reference to back numbers. Inaccuracies developed since the publication of the original notices have in every case been rectified, and no trouble or expense spared to make the table authoritative in every respect.

ARKANSAS

Purchaser	City	Tonnage	No.	Page
City Water & Light Plant	Jonesboro	350	429	

CONNECTICUT

The Connecticut Power Co	Middletown	5,000	101	356
The Stamford Gas & Electric Co	Stamford	5,000	154	398
The Adams Mfg. Co	Shelton	3,500	162	399
The Burns & Bassick Co	Bridgeport	1,100	168	399
The Union Typewriter Co	Bridgeport	2,000	174	399
The Canfield Rubber Co	Bridgeport	1,800	181	399
E. A. Malloy & Sons, Inc	Danbury	3,000	185	399
The Pratt & Cady Co	Hartford	2,700	193	399
North & Judd Mfg. Co	New Britain	5,000	201	400
The Hartford Rubber Works	Hartford	10,000	212	400
The Middletown Electric Light Co	Middletown	5,000	232	447
The Russell Mfg. Co	Middletown	3,500	234	447
The Columbia & Electric Vehicle Co	Hartford	2,500	239	447
The Peck, Stow & Wilcox Co	Southington	10,000	245	447
The Connecticut Hospital for the Insane	Middletown	9,600	249	447
The United Gas Improvement Co	Waterbury	5,000	250	447
The C. M. Robertson Co	Montville	3,000	254	447
The Department of Charities and Correction	New Haven	1,100	257	447
The Ensign Bickford Co	Avon	2,500	261	447
The Meriden Gas Light Co	Meriden	9,000	265	448
The Hartford & Springfield St. R.R. Co	Warehouse Point	4,000	269	448
The Thompsonville Water Co	Thompsonville	500	278	448
The Northern Connecticut Light & Power Co	Windsor Locks	800	279	448
The Hartford Machine Screw Co	Hartford	2,500	299	488
The Morse, Powhatan & Nightingale Mills	Putnam	2,000	317	488

COLORADO

The Grand Junction Electric, Gas & Mfg. Co	Grand Junction	7,500	214	446

ILLINOIS

The Galesburg Artificial Ice Co	Galesburg	11,000	100	356
Southern Illinois Light & Power Co	Gillespie	3,000	177	399
The Illinois Northern Utilities Co	Dixon	45,000	217	446
The Grand Crossing Tack Co	Chicago	235	238	447
Union Malleable Iron Co	East Moline		302	488
Republic Iron & Steel Co	Moline	800*	330	527
Pinckneyville Light, Ice & Power Co	Pinckneyville	3,000	405	
Northwestern Yeast Co	Chicago	3,000	419	
Acme Steel Goods Co	Chicago	1,200	452	
Aermotor Co	Chicago	60**	451	

INDIANA

Haskell & Barker Car Co	Michigan City	77,000	358	
The Interstate Public Service Co	Indianapolis	7,800	109	357
The Huntingburg Electric Light Co	Huntingburg	2,065	209	400
The Wabash Water & Light Co	Wabash	7,500	227	446
Sullivan Electric Co	Sullivan		318	488
The Artificial Ice & Cold Storage Co	Indianapolis	150*	323	527
Maxwell New Castle Mfg Co	New Castle		329	527
Patent Vulcanite Roofing Co	Anderson		341	528
The American Straw Board Co	Noblesville		350	
The Red Cross Mfg. Co	Bluffton		351	
The Sefton Mfg. Co	Anderson		366	
The Alexander Paper Co	Alexander		371	
The United Sanitary Mfg. Co	Noblesville		372	
The Wabash Water & Light Co	Wabash		374	
The Capital Furniture Co	Noblesville		375	
The Marion Paper Co	Marion		376	
The Holt Ice & Cold Storage Co	Indianapolis		378	
The City Ice & Coal Co	Indianapolis		379	
The Ladoga Light Co	Ladoga		380	
The Bloomington Coal Co	Bloomington		381	

IOWA

The Marion County Electric Co	Knoxville	5,400	106	357
The Municipal Electric Light & Water Works	Mount Pleasant	2,000	115	357
The local city government	Indianola	2,500	173	399
The City Electric Light & Water Works	Eldon	1,200	230	447
Clarion Light Plant	Clarion	1,000	320	527
Citizens Light, Heat & Power Co	Eagle Grove	3,500	400	

MAINE

The Pejepscot Paper Co	Topsham	25,000	200	400
The Portland Iron & Steel Co	Portland	15,000	202	400
The Penobscot Chemical Fibre Co	Great Works	20,000	213	400

*Per week. ** Cars per month.

MARYLAND

Purchaser	City	Tonnage	No.	Page
The Baltimore Bargain House	Baltimore	500	99	356
Strouse & Bro	Baltimore	300 to 400	102	356
Sharpe & Dohme	Baltimore	250 to 300	104	356
The Baltimore & Ohio Central Bldg	Baltimore	3,000	118	357
The Equitable Bldg	Baltimore	1,200	129	357
The Continental Trust Co	Baltimore	1,300 to 1,500	132	357
The Baltimore Sun	Baltimore	700	156	398
The Municipal Electric Light Plant	Frederick	1,100	216	446
The National Enameling & Stamping Co	Baltimore	350 to 400	349	

MASSACHUSETTS

The Board of Education	Somerville	4,000	105	356–7
The Light, Heat & Power Corp	Boston	18,000	127	357
The National Biscuit Co	Cambridgeport	1,000	134	357
Stone & Webster Co	Boston	50,000	141	358
The United States Post Office Sub-Treasury Bldg	Boston	3,100	150	398
William Knowlton & Sons	West Upton	1,500	153	398
The Fitchburg Paper Co	West Fitchburg	1,800	159	399
The Quincy Market Cold Storage & Warehouse Co	Boston	15,000 to 20,000	163	399
The Athol Gas & Electric Co	Athol	1,700	169	399
The Southbridge Printing Co	Southbridge	12,000	178	399
The Natick Gas Light Co	Natick	1,700	186	399
The Champion International Co	Lawrence	20,000	198	400
The National Fire Proofing Co	Revere	7,500	203	400
The Geo. E. Kunhardt Co	Lawrence	5,000	210	400
The Board of Education	Cambridge	5,000	228	446
The Easthampton Rubber Thread Co	Easthampton	1,500	231	447
The United Electric Light Co	Springfield	20,000	235	447
The Northampton Electric Lighting Co	Northampton	2,500	237	447
The Stafford Mills	Fall River	11,000	241	447
The Elizabeth Poole Mills	Taunton	1,500	244	447
Lennox & Briggs	Haverhill	1,800	246	447
The Mt. Tom Sulphite Pulp Co	Mt. Tom Junction	11,000	248	447
The Taunton State Hospital	Taunton	3,000	252	447
Reed & Barton	Taunton	1,500 to 2,000	255	447
The Algonquin Printing Co	Fall River	12,000	259	447
The City of Boston	Boston	62,000	266	448
Joseph M. Herman & Co	Millis	400	272	448
Helliwell & Co	Pittsfield	1,500	274	448
David N. Taft	Oxford	500	277	448
The Southworth Co	Mittineague	3,000	280	448
The Northampton Gas Light Co	Northampton	3,500	297	488
The Monument Mills	Housatonic	2,000	301	488
The Arlington Gas Light Co	Arlington	1,500	315	488
The Lowell Hosiery Co	Lowell	1,100	319	527
City of Springfield	Springfield	8,000 to 10,000	331	527–8

MICHIGAN

The Supply Committee, Board of Education	Lansing	1,700	130	357
The Municipal Government	St. Joseph	800 to 1,000	176	399
The Board of Public Works	Hillsdale	3,500	219	446
The Kalamazoo Corset Co	Kalamazoo		309	488

MINNESOTA

St. Peter Electric Light & Water Works	St. Peter	1,200 and 1,400	208	400
The Board of Education	Minneapolis	15,000	373	

MISSOURI

Ozark Valley Ry. Co	Greenville	200†	354	
Edgar Zinc Co	St. Louis	104**	423	
Continental Portland Cement Co	St. Louis	100**	424	
Herf & Frerichs Chemical Co	St. Louis	20**	425	
Laclede Gas Light Co	St. Louis	90**	426	
St. Louis Smelting & Refining Co	St. Louis	80**	427	
St. Louis Malleable Casting Co	East St. Louis	60**	428	

NEBRASKA

Central City Light & Water Works	Central City	1800	338	528

NEW HAMPSHIRE

The Board of Education	Concord	1,000	166	399
The local electric light dept	Wolfeboro	300	187	399
Dexter Richards & Sons Co	Newport	2,500	197	400
The United Gas Improvement Co	Concord	1,000	207	400
Claremont Power Co	Claremont	1,000	275	448
Winnepesaukee Gas & Electric Co	Laconia	300	281	448
The Dodge-Davis Manufacturing Co	Bristol	700	284	448

NEW YORK

The Board of Education	Watertown	12,000	111	357
The National Biscuit Co	New York	10,000	128	357
Board of Education	Niagara Falls	1,700	182	399
The Atlantic, Gulf & Pacific Co	New York	30,000	194	400
The International Paper Co	New York	200,000	236	447
Hastings Pavement Co	New York	6,000 to 9,000	393	
Municipal Department	Buffalo	500	422	
College of the City	New York	1,600	432	

** Cars per month. † Tons per month.

Purchaser	City	Tonnage	No.	Page
OHIO				
The Municipal Electric Light & Power Co.	Martins Ferry	3,000 to 4,000	215	446
OREGON				
The Board of Education	Portland	2,000	226	446
Schools	Portland		362	
PENNSYLVANIA				
Soldiers' and Sailors' Home	Erie		260	447
The Board of Education	Reading	2,500	377	
RHODE ISLAND				
The Forestdale Mfg. Co.	Forestdale	4,000	152	398
The Greene & Daniels Mfg. Co.	Pawtucket	5,000	161	399
The Gorham Mfg. Co.	Providence	5,000	184	399
Federal Departments of the State of Rhode Island	Providence		313	488
Brown & Sharpe	Providence	10,000	322	527
SOUTH CAROLINA				
The Bennettsville Electric & Water Plant	Bennettsville	7,500	229	447
Municipal Electric Light & Water Works	Union	2,500	399	
VERMONT				
The United Shirt & Collar Co.	Fair Haven	4,000	233	447
The Robertson Paper Co.	Bellows Falls	4,000	240	447
The Capital City Gas Co.	Montpelier	2,000	247	447
The Rockingham Paper Co.	Bellows Falls	2,000	251	447
The Rutland R.R., Light & Power Co.	Rutland	3,000	253	447
The Black River Woolen Co.	Ludlow	1,000 to 1,500	256	447
Twin-State Gas & Electric Co.	Brattleboro	500	271	448
The Bennington Gas Light Co.	Bennington	225	276	448
WISCONSIN				
The Municipal Electric Light & Water Works Plant	New London	1,200	113	357
City Water & Light Plant	Shawano	2,000	183	399
Moline Plow Co.	Stoughton		300	488

No. 296—Leavenworth, Kan.—(Official)—Bids on this contract (p. 488) which provides for furnishing coal to the County Court House, County Jail, County Hospital, and for the poor of the county, were as follows: Carr Coal Mining & Mfg. Co., screened lump, $3.75; Home Riverside Coal Co., screened lump, $4. Address County Clk. J. E. Voorhees, County Clerk's Office, Leavenworth, Kan.

No. 302—East Moline, Ill.—On this contract (p. 488), which provides for furnishing coal to the Union Malleable Iron Co., only Virginia coal is wanted. Address Purchasing Agent, Union Malleable Iron Co., East Moline, Ill.

No. 331—Springfield, Mass.—(Official)—The City Property Committee advises that this contract (p. 527) is placed with local dealers who can make deliveries. Address Schoolhouse Agt. H. L. Dorman, City Property Committee, Municipal Bldg., Springfield, Mass.

No. 332—Buffalo, N. Y.—The bids on this contract (p. 528), which provides for furnishing 35,000 tons of ¾-in. slack coal for the Municipal Water Works, were as follows: Frick Coal & Coke Co., Buffalo, N. Y., $1.88; Spaulding & Spaulding, $1.89; Valley Camp Coal Co., $1.99; F. P. Weaver Coal Co., $1.99; E. L. Hedstrom, $2.03; Rochester & Pittsburgh Coal & Iron Co., $2.10. Address Comr. Col. Francis G. Ward, Dept. of Public Works, Buffalo, N. Y.

No. 334—Jersey City, N. J.—The bids on this contract (p. 528), which provides for furnishing anthracite coal to the various public schools, were as follows: To Dickinson High School and schools Nos. 6, 7, 8, 10, 23, 25, 27, 28, 31 and 32, James Coyle, egg, $6.09; stove, $6.09; chestnut, $6.34; pea, $4.22; buckwheat, $4.22. For all schools, E. L. Young Co., egg, $5.53; stove, $5.53; chestnut, $5.53; pea, $4.30; buckwheat, $3.50. Both of the above bidders are of Jersey City. Address Secretary Board of Education, Jersey City, N. J.

No. 347—Burlington, Iowa—(Official)—Sealed bids will be received until Mar. 29 for furnishing the municipality with coal for the fiscal year ending Mar. 31, 1916 (p. 528). Address City Clk. Robert Kroppach, Burlington, Iowa.

No. 348—Elgin, Ill.—(Official)—The Elgin Watch Co. will soon contract for their next year's supply of coal. This company uses about four cars of screenings per week for steam purposes. Address G. P. Cory, Elgin National Watch Co., Elgin, Ill.

No. 349—Baltimore, Md.—The National Enameling & Stamping Co. will be in the market about Apr. 1 for a supply of soft and hard coal. This company uses from 350 to 400 tons per month. Address R. D. Samuels, 305 Fifth Ave., New York, N. Y.

No. 350—Noblesville, Ind.—The American Straw Board Co. at this place will contract for screenings for steam purposes, the same to go into effect Apr. 1 for a period of one year. Address American Straw Board Co., Akron, Ohio.

No. 351—Bluffton, Ind.—The Red Cross Mfg. Co. will be in the market for their supply of lump coal about Apr. 1. Address Red Cross Mfg. Co., Bluffton, Ind.

No. 352—Hoopston, Ill.—The Iliff-Bruff Chemical Co. is in the market for its annual supply of coal. This company prefers No. 4 vein Indiana mine-run coal. Address Purchasing Agent, Iliff-Bruff Chemical Co., Hoopston, Ill.

No. 353—Greenville, Mo.—Bids will be received until Apr. 1, for furnishing 200 tons per month of 2-in. Illinois lump coal to the Ozark Valley Ry. Co. Bidders should state the mine price, with the freight rate to Greenville, Mo. This contract is to cover a period of one year. Address Purchasing Agent, Ozark Valley Ry. Co., Greenville, Mo.

No. 354—Janesville, Wis.—The Janesville Machine Co. at this place is in the market for its annual supply of nut coal. This company consumes approximately 2500 tons, and delivery is made via Chicago, Milwaukee & St. Paul Ry., or Chicago & Northwestern Ry. Address Pur. Agt., C. O. Eddy, Janesville Machine Co., Janesville, Wis.

No. 355—Mankato, Minn.—Fowler & Pay at this place are in the market for a supply of Indiana 4th vein coal. Address Fowler & Pay, Mankato, Minn.

No. 356—Frankfort, Ind.—The Union Rolling Mills are in the market for a supply of mine-run coal. Address Union Rolling Mills, Frankfort, Ind.

No. 357—Pottsville, Penn.—Bids were received until 10 a.m., Mar. 25, for furnishing the Almshouse with 400 tons of stove coal and 3000 tons of buckwheat coal, for the year ending Mar. 31, 1916. Address County Controller J. E. Kantner, Pottsville, Penn.

No. 358—Michigan City, Ind.—The Haskell & Barker Car Co. will be in the market about Apr. 1 for their year's supply of coal, the shipments to be made in equal monthly proportions. The quantities involved are as follows: 25,000 tons of mine-run for power plant; 30,000 tons of 1¼-in. lump for gas producers; 22,000 tons of 6-in. lump for annealing ovens. For the power plant either 5th or 6th vein Indiana coal will be accepted; for the gas producers, 4th vein Indiana coal and for the annealing ovens, Indiana block or coal from Franklin County, Ill. Address Purchasing Agent, Haskell & Barker Car Co., Michigan City, Ind.

No. 359—Chicago, Ill.—The Aermotor Co. will contract about Apr. 1 for 60 cars of Indiana lump coal. Address Purchasing Agent, Aermotor Co., 1146 Campbell Ave., Chicago, Ill.

No. 360—Chicago, Ill.—The Acme Steel Goods Co. will contract about Apr. 1 for its annual supply of coal. This company uses about 1200 tons No. 3 Illinois raw nut coal. Address Pur. Agt. H. H. Onstott, Acme Steel Goods Co., 2834 Archer Ave., Chicago, Ill.

No. 361—Ontario, Canada—(Official)—Sealed tenders were received up to Mar. 25 for furnishing coal to the military buildings at Kingston, Belleville, Port Hope, Cobourg, Peterborough, Ottawa, Brockville, Picton, Lindsay and Renfrew. Address Surgeon-Gen. Eugene Fiset, Ottawa, Ont., Canada.

No. 362—Portland, Ore.—(Official)—Proposals will be received until 5 p.m., Mar. 31, for furnishing coal for the schools for the year 1915-1916. Bids are to be opened at 4 p.m., Apr. 1. Each bid must be accompanied by a certified check for 5 per cent. of the bids. Address School Clk. R. H. Thomas, Portland, Ore.

No. 363—Toledo, Ohio—(Official)—The Water-Works at this place is in the market for 10,000 tons of nut and slack soft coal, and 5000 tons of anthracite coal. At present, various grades are being tested, and the Board has not determined upon its exact requirements. Address Water-Works Board, Valentine Bldg., Toledo, Ohio.

No. 364—Plymouth, Mass.—The Brockton & Plymouth St. Ry. Co. will soon be in the market for about 2000 tons of coal. Address Purchasing Agent, Brockton & Plymouth St. Ry. Co., Plymouth, Mass.

No. 365—Middletown, Conn.—The Middletown Electric Light Co. will be in the market for its annual coal supply shortly. This company uses about 7000 tons per year. Address Purchasing Agent, Middletown Electric Light Co., Middletown, Conn.

No. 366—Anderson, Ind.—The Sefton Mfg. Co. will be in the market for their coal supply for the next season about Apr. 1. Address the Sefton Mfg. Co., Anderson, Ind.

No. 367—Dunkirk, N. Y.—Bids will be received until Apr. 13, for furnishing the Board of Water Commissioners with coal for the ensuing year. Address Secy. Baumgartner, Board of Water Commissioners, Dunkirk, N. Y.

No. 368—Kokomo, Ind.—The Kokomo Sanitary Milk & Ice Cream Co. will contract soon for the season's supply of screenings or mine-run coal. Address the Kokomo Sanitary Milk & Ice Cream Co., Kokomo, Ind.

No. 369—Bridgeport, Conn.—The United Illuminating Co. will be in the market during April for approximately 16,000 tons of bituminous coal, the usual contract price being $4 per ton. Address Mgr. C. A. Paul, the United Illuminating Co., Bridgeport, Conn.

No. 370—Rumford Falls, Maine—The Fort Hill Chemical Co. will be in the market for 500 tons of coal soon. Address Purchasing Agent, Fort Hill Chemical Co., Rumford Falls, Maine.

No. 371—Alexander, Ind.—The Alexander Paper Co. will contract about Apr. 1 for next season's supply of mine-run coal. Address Alexander Paper Co., Alexander, Ind.

No. 372—Noblesville, Ind.—The United Sanitary Mfg. Co. will contract for a supply of mine-run coal about Apr. 1. Address United Sanitary Mfg. Co., Noblesville, Ind.

No. 373—New York, N. Y.—(Official)—Sealed bids will be received up to noon, Mar. 29, for furnishing and delivering coal as required by the Department of Docks and Ferries. Contract is to be completed within 90 days, and the amount of security required is 30% of the bid. A deposit of 1½ per cent. must accompany each bid. Address Comr. of Docks, R. A. C. Smith, Pier A, Foot of Battery Place, North River, New York.

No. 374—Wabash, Ind.—The Wabash Water & Light Co. at this place will be in the market for their next season's supply of screenings about Apr. 1. Address the Wabash Water & Light Co., Wabash, Ind.

No. 375—Noblesville, Ind.—The Capital Furniture Co. will be in the market about Apr. 1 for their supply of mine-run coal for next season. Address Capital Furniture Co., Noblesville, Ind.

No. 376—Marion, Ind.—The Marion Paper Co. will be in the market for their coal requirements about Apr. 1. Address Marion Paper Co., Marion, Ind.

No. 377—Jersey City, N. J.—(Official)—Bids will be received until 2 p.m., Apr. 8, for supplying coal to the Municipal Buildings from date of contract to Mar. 31, 1916. Address City Clk. Michael I. Fagen, City Hall, Jersey City, N. J.

No. 378—Indianapolis, Ind.—The Holt Ice & Cold Storage Co. at this place will probably contract about Apr. 1 for its supply of coal. This company uses about 200 tons of No. 5 Indiana screenings for steam purposes per week. Address Purchasing Agent, Holt Ice & Cold Storage Co., Indianapolis, Ind.

No. 379—Indianapolis, Ind.—The City Ice & Coal Co. will contract about Apr. 1 for its supply of coal. This company consumes about 100 tons of No. 5 Indiana screenings for steam purposes per week. Address Purchasing Agent, City Ice & Coal Co., Indianapolis, Ind.

No. 380—Ladoga, Ind.—The Ladoga Light Co. will probably contract about Apr. 1 for a supply of No. 5 Indiana screenings for steam purposes. This company consumes about 25 tons per week. Address Purchasing Agent, Ladoga Light Co., Ladoga, Ind.

No. 381—Bloomington, Ind.—The Bloomington Coal Co. will contract about Apr. 1 for a supply of No. 5 Indiana screenings for steam purposes. This company purchases 150 tons per week. Address Purchasing Agent, Bloomington Coal Co., Bloomington, Ind.

No. 382—New York, N. Y.—(Official)—Sealed bids will be received until 2 p.m., Apr. 1, for furnishing and delivering about 1200 gross tons of No. 3 buckwheat coal and 400 gross tons of semi-bituminous mine-run coal, at Amsterdam Ave. and 139th St. Deliveries are to be completed by Dec. 31 of the current year and the security required is 30% of the bid. Address Curator R. V. Davis, Room 114, Main Bldg., 139th St. and Convent Ave., New York.

No. 383—New York, N. Y.—(Official)—Sealed bids will be received until noon, Mar. 31, for furnishing and delivering coal to Bellevue and allied hospitals, Departments of Correction, Fire, Public Charities, Parks, Bronx and Queens Parks. The amount of security required on this contract is 30% of the bid, and the contract runs over the three months ending June 30, 1915. Address Contract Clerk, Room 1226 Municipal Bldg., New York.

No. 384—Savannah, Ga.—The Savannah Electric Co. will soon be in the market for its annual supply of coal. This company uses about 20,000 tons per year. Address Purchasing Agent, Savannah Electric Co., Savannah, Ga.

No. 385—Tampa, Fla.—The Tampa Electric Co. will soon be in the market for about 15,000 tons of coal. Address Purchasing Agent, Tampa Electric Co., Tampa, Fla.

No. 386—Jacksonville, Fla.—The Jacksonville Traction Co. will soon be in the market for about 8000 tons of coal. Address Pur. Agt., Jacksonville Traction Co., Jacksonville, Fla.

No. 387—Ponce, Porto Rico—The Ponce Ry. & Light Co. will soon be in the market for its annual supply of coal. This company uses about 8000 tons per year. Address Purchasing Agent, Ponce Ry. & Light Co., Ponce, Porto Rico.

No. 388—Haverhill, Mass.—The Haverhill Gas Light Co. will soon be in the market for its annual supply of coal; it consumes about 1000 tons per year. Address Purchasing Agent, Haverhill Gas Light Co., Haverhill, Mass.

No. 389—Houghton, Mich.—The Houghton County Traction Co. will be in the market shortly for about 6000 tons of coal. Address Purchasing Agent, Houghton County Traction Co., Houghton, Mich.

No. 390—Hinsdale, N. H.—C. J. Amidon & Son will be in the market for 2000 tons of bituminous coal about May 1, delivery via B. & M. R.R. Address C. J. Amidon & Son, Hinsdale, N. H.

No. 391—Concord, N. H.—The St. Paul's School will be in the market about May 1 for 1500 to 3000 tons of anthracite and bituminous coal, delivery via B. & M. R.R. Address Business Manager, St. Paul's School, Concord, N. H.

No. 392—Somersworth, N. H.—The Great Falls Mfg. Co. will be in the market for 7000 tons of bituminous coal about May 1, delivery via water and B. & M. R.R. Address Great Falls Mfg. Co., Somersworth, N. H.

No. 393—New York, N. Y.—(Official)—Proposals will be received until Mar. 31 for furnishing alongside dock at Hastings-on-Hudson, N. Y., from 6000 to 9000 gross tons of bituminous coal. Address Pres. E. J. Morrison, Hastings Pavement Co., 25 Broad St., New York, N. Y.

No. 394—Carroll, Iowa—(Official)—The Carroll Light & Heat Co. will be in the market during April for 12,000 tons of southern Illinois coal. The present contract was closed at $3.75 per ton. Address Mgr. F. C. Ross, Carroll Light & Heat Co., Carroll, Iowa.

No. 395—Chicago, Ill.—(Official)—Bids will be received until 11 a.m., Apr. 15, for furnishing coal required at the posts of the Central Department during the fiscal year commencing July 1. Address the Department Quartermaster, 566 Federal Building, Chicago, Ill.

No. 396—National Soldiers' Home, Va.—(Official)—Sealed proposals will be received until 1:30 p.m., Apr. 16, for furnishing 10,000 tons of bituminous coal to the Southern Branch N. H. D. V. S. National Soldiers' Home. Address Treas. S. E. Skinner, National Soldiers' Home, Va.

No. 397—Lorain, Ohio—(Official)—Bids will be received until noon, Apr. 19, for furnishing coal for the school year 1915-16 to the Board of Education. Address Clk. E. Bruell, Board of Education, High School Bldg., Lorain, Ohio.

No. 398—Lancaster, Penn.—(Official)—Proposals were received up to 10 a.m., Mar. 20, for furnishing and delivering at the almshouse 1200 tons of pea coal, 250 tons of nut coal, 25 tons of Lehigh Valley broken coal, and 60 tons of mixed stove coal. Address Secy. A. G. Seyfert, Director of the Poor of Lancaster County, Lancaster, Penn.

No. 399—Union, S. C.—(Official)—The Municipal Electric Light & Water Works at this place will be in the market about Apr. 1 for 2500 tons of ¼-in. screened soft coal, the approximate cost per ton being $3.35 delivered. Address Pur. Agt., Municipal Electric Light & Water Works, Union, S. C.

No. 400—Eagle Grove, Iowa—(Official)—The Citizens Light, Heat & Power Co. will purchase about Apr. 1, 3500 tons of Illinois screenings, the usual price being $3.05 per ton. Address Purchasing Agent, Citizens Light, Heat & Power Co., Eagle Grove, Iowa.

No. 401—Milwaukee, Wis.—(Official)—The Board of Education will contract during April for the following: 500 tons of hard coal; 10,000 tons of screenings; 3500 tons of Pocahontas coal; 600 tons of lump coal; and 75 tons of coke. Address the Secretary, School Board, 10th and Prairie St., Milwaukee, Wis.

No. 402—New Haven, Conn.—(Official)—The Board of Education of this city will be in the market during April for approximately 4200 gross tons of Hazelton coal. The present contract price is $6.28 delivered in bins. Address Board of Education, 87 Orange St., New Haven, Conn.

No. 403—Bayonne, N. J.—(Official)—The Board of Education at this place will contract during the month of April for about 2500 tons of egg, stove, nut, and pea coal. Address Secretary, Board of Education, 26th St. and Avenue C, Bayonne, N. J.

No. 404—Easton, Penn.—(Official)—The Board of Education will be in the market for about 600 tons of best Lehigh coal, some time during April. Address Secy. R. E. Peifer, Board of Education, Easton, Penn.

No. 405—Pinckneyville, Ill.—(Official)—The Pinckneyville Light, Ice & Power Co. will contract about Apr. 1 for 3000 tons of mine-run coal, the approximate cost per ton being

$1.15 delivered at the plant. Address Secy. E. K. Kane, Pinckneyville Light, Ice & Power Co., Pinckneyville, Ill.

No. 406—North Adams, Mass.—(Official)—The Board of Education at this place will contract during April or May for about 950 tons of anthracite and buckwheat coal. The present contract was awarded as follows: Grate, $6.20; egg, $6.43; stove, $6.68. Address Secy. F. B. Walker, School Committee, North Adams, Mass.

No. 407—Logansport, Ind.—(Official)—Bids will be received until 10 a.m., Apr. 27, for supplying the Electric Light Department and the Water Works Department, from Sept. 1, 1915, to Sept. 1, 1916, with mine-run coal and screenings; also for furnishing about 50 tons of anthracite nut coal, for use in the city offices and Pittsburgh 1¼-in. coal for use in the heating of fire stations. The bidder should state routing and freight rates. Deliveries to be made on the electric light siding on the north side of Eel River via the Vandalia R.R. Address Thomas Flinn, Board of Public Works, Logansport, Ind.

No. 408—Hartford, Conn.—Sealed bids will soon be called by the city government for furnishing 3445 tons of stove, 434 tons of chestnut, 286 tons of egg, 600 tons of buckwheat, and 300 tons of bituminous coal. Deliveries are to be made as designated within city limits, and about 60% of this coal may be delivered before Sept. 1, the balance as required. Address City Clk. Henry F. Smith, Hartford, Conn.

No. 409—LaPorte, Ind.—(Official)—Bids were received up to 10 a.m., Mar. 27, for furnishing about 1000 tons of coal to the City Water Works. The coal required was to be from Illinois, known as "Premium" coal, or its equivalent. Address City Clk. Wm. F. Krueger, LaPorte, Ind.

No. 410—Lebanon, Penn.—(Official)—Sealed proposals will be received until 4 p.m., Apr. 2, for furnishing 900 gross tons of stove, egg, nut, and pea coal, to be delivered in the bins of the various buildings in the city, at such times and in such quantities as may be required. The coal is to be first-class white ash, well screened, and weighed by the supervising janitor. Address Chn. Fuel and Light Com., John H. Seltzer, Lebanon, Penn.

No. 411—Toronto, Ont., Can.—(Official)—Bids will be received until noon, Mar. 30, for furnishing coal for the Department of Water Supply. Address Chn. T. L. Church, Board of Control, City Hall, Toronto, Ont., Can.

No. 412—Winnipeg, Man., Can.—(Official)—Bids will be received until 5 p.m., Mar. 29, for furnishing coal for the technical and public schools. Address Comr. of Supplies J. B. Mitchell, Winnipeg, Man., Can.

No. 413—Fort Sam Houston, Tex.—(Official)—Bids will be received until 11 a.m., Apr. 15, for furnishing coal as required at the Southern Department posts during the fiscal year, commencing July 1, 1915. Address Quartermaster G. S. Bingham, Fort Sam Houston, Tex.

No. 414—National Home, Wis.—(Official)—Bids will be received until noon, Apr. 27, for furnishing bituminous coal to the Northwestern Branch, N. H. D. V. S., National Home for the year ending June 30, 1916. Address Treas. R. W. Corbett, Northwestern Branch, N. H. D. V. S., National Home, Wis.

No. 415—Vineland, N. J.—(Official)—Sealed proposals were received on Mar. 23, for supplying the borough with from 3000 to 3500 tons of bituminous coal. Address Borough Clk. J. Crawford Van Kuren, City Hall, Vineland, N. J.

No. 416—New Philadelphia, Ohio—(Official)—Sealed bids were received up to noon, Mar. 25, for furnishing good quality mine-run coal at the engine house of the waterworks in this city. Address Dir. J. E. Scott, New Philadelphia, Ohio.

No. 417—Portland, Maine—The Grand Trunk Ry. Co. will require, for use in the next six or eight weeks, 750 to 1000 tons of anthracite coal at its stations, etc. Prices are requested f.o.b. Portland or alongside Grand Central dock, Portland. Address Gen. Pur. Agt., John H. Guess, Grand Trunk Ry. Co., Montreal, Can.

No. 418—Chicago, Ill.—The Whitman & Barnes Mfg. Co. will soon be in the market for a supply of steam coal. This company uses about 20,000 tons per year. Address Pur. Agt. Guy H. Castle, 1000 West 120th St., Chicago, Ill.

No. 419—Chicago, Ill.—The Northwestern Yeast Co. will be in the market about Apr. 1 for 3000 tons of Indiana screenings. Address Pur. Agt. T. P. Hodge, Northwestern Yeast Co., 1750 North Ashland Ave., Chicago, Ill.

No. 420—Chicago, Ill.—The Link-Belt Co. will soon contract for about 8000 tons of steam coal. Address Pur. Agt. F. A. Marsh, Link-Belt Co., 39th St. and Stewart Ave., Chicago, Ill.

No. 421—Indianapolis, Ind.—The Fairbanks, Morse Electrical Mfg. Co. will soon be in the market for their requirements of screenings for steam purposes. The present contract expires Mar. 31. Address Pur. Agt. J. E. Cook, Fairbanks, Morse Electrical Mfg. Co., Indianapolis, Ind.

No. 422—Buffalo, N. Y.—(Official)—Sealed proposals will be received until 11 a.m., Mar. 30, for furnishing and delivering about 500 tons of coal at the bridges on Michigan St. over Buffalo River; South Michigan St. over City Ship Canal, and Ohio St. over Buffalo River, as may be required from date of contract to Mar. 31, 1916. Address Comr. Francis G. Ward, Municipal Building, Buffalo, N. Y.

No. 423—Carondelet (post office, St. Louis), Mo.—The present contract of the Edgar Zinc Co. expires on Apr. 1. This company consumes about 100 cars of high grade 2-in. screenings, and 10 cars of No. 4 nut coal per month. The coal used is from Williamson or Franklin County. In submitting bids, name of mine and location of same must be stated, and also railroad upon which it is located, with the freight rate to St. Louis. Address Pur. Agt. W. F. Daly, Edgar Zinc Co., Carondelet (post office, St. Louis), Mo.

No. 424—St. Louis, Mo.—The Continental Portland Cement Co. requires about 100 cars of 1- to 2-in. screenings per month; Williamson or Franklin County are used. The present contract expires on Apr. 1. In submitting bids name of mine must be stated, roads over which shipped and freight rates to St. Louis and Continental, Mo. Address Pur. Agt. J. B. Turpin, Continental Portland Cement Co., Syndicate Trust Bldg., St. Louis, Mo.

No. 425—St. Louis, Mo.—The Herf & Frerichs Chemical Co. uses about 20 cars of 2-in. screenings from Williamson or Franklin County per month. The present contract of this company expires on April 1. In submitting bids, mines, railroad and freight rate must be stated. Address Pur. Agt. Mr. Koons, Herf & Frerichs Chemical Co., St. Louis, Mo.

No. 426—St. Louis, Mo.—The Laclede Gas Light Co. consumes about 90 cars per month of 2-in. screenings from Williamson or Franklin County. The present contract expires on Apr. 1. In submitting bids, name of mine, roads over which shipped and freight rate to St. Louis must be stated. Address Mr. Eaton, Laclede Gas Light Co., St. Louis, Mo.

No. 427—St. Louis, Mo.—The St. Louis Smelting & Refining Co. uses about 80 cars of 2-in. screenings per month. The present contract expires on Apr. 1. In submitting bids, location of mine, roads over which shipped and freight rates to St. Louis and St. Francois, Mo., must be given. Address Pur. Agt. W. M. Lowry, St. Louis Smelting & Refining Co., St. Louis, Mo.

No. 428—East St. Louis, Ill.—The St. Louis Malleable Casting Co. uses about 60 cars per month of Williamson or Franklin County lump and egg coal. The present contract expires on Apr. 1. Address St. Louis Malleable Casting Co., East St. Louis, Ill.

No. 429—Jonesboro, Ark.—The City Water & Light Plant will receive bids about Apr. 1 for furnishing about 350 tons of Southern Illinois screenings per month. Coal from Saline, Jackson, Williamson or Franklin County is preferred. Address Mgr. J. F. Christie, City Water and Light Plant, Jonesboro, Ark.

No. 430—New London, Conn.—The New London Gas & Electric Co. will soon be in the market for about 7000 tons of coal. Address Purchasing Agent, New London Gas & Electric Co., New London, Conn.

No. 431—Baltimore, Md.—(Official)—Sealed proposals in duplicate will be received until 11 a.m., Mar. 31, for furnishing and delivering anthracite and bituminous coal to the various city departments. The quantity involved and the districts in which coal is to be delivered are as follows:

	Bituminous Mine-Run			
Districts	School	Health	Fire	Baths
Northwestern	335	50	4	...
Northeastern	940	50	3	...
Western	450	30	9	250
Central	650	5	11	200
Eastern	775	..	17	650
Southern	380	20	48	175

Pumping Stations		Miscellaneous	
Eastern	5000	Engine Cos. 16 and 39,	
Mt. Royal	8500	fire boats	3600
Western	1500	Health Dept. tugboats	250
Sewage	3500	City Morgue	30
High Pressure Fire	8000	Bay View Power Plant	7600

	Anthracite			
Districts	Furnace	Egg	Stove	Chestnut
Central	290	1500	700	..
Eastern	500	1600	950	20
Northeastern	100	900	200	10
Northwestern	200	400	200	20
Western	250	1300	500	..
Southern	260	1100	540	..

Bay View Asylum, 125 tons egg.

Health Dept., 80 tons stove, delivered on Quarantine Station wharf by scows.

The Harbor Board requires 250 tons for tugboats, 600 tons for iceboats and 80 tons for drawbridge.

Address City Engr. H. K. McCay, City Hall, Baltimore, Md.